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THE AMERICAN PEOPLE AND THEIR ENVIRONMENT-1973. A STUDY OF NATIONAL OPINION AND ATTITUDES ABOUT ENVIRONMENTAL PROBLEMS AND THEIR SOLUTION FOR THE UNITED STATES ENVIRONMENTAL PROTECTION AGENCY. VOLUME I

JOSEPH M. VILADAS COMPANY

PREPARED FOR
ENVIRONMENTAL PROTECTION AGENCY

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The data were gathered through 3,012 personal interviews with a representative sample of adults, 18 years of age and older, who reside in the continental United States. The interviews were completed in June 1973.

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TABLE OF CONTENTS

Page

HIGHLIGHTS.. v

I. INTRODUCTION.. 1

- Why This Study Was Done.......................... 1
- Scope Of This Survey.......................... 3
- The Study Design.......................... 5

II. PEOPLE'S PERCEPTION OF THE ENVIRONMENT AND ITS QUALITY.......................... 7

- Questions Asked About the Perception of the Environment.......................... 8
- Popular Meaning of Environment.......................... 8
- Demographic Differences in the Idea of an Excellent Environment.......................... 9
- Questions Asked About the Quality of the Environment..........................12
- Environmental Quality Ratings..........................12
- Demographic Differences in Environmental Quality Ratings..........................15
- Summary..........................17

III. OPINIONS ABOUT ENVIRONMENTAL DAMAGE AND HEALTH EFFECTS..........................19

- Questions Asked..........................20
- Ratings of Damage to the Environment..........................22
- Environmental Damage and Area Size..........................24
- Environmental Quality Ratings and Concern About Damage..........................27
- Ratings of Effect on People's Health..........................28
- Comparison of Environmental Damage and Health Effect Ratings..........................31
- Summary..........................32

Page

IV. THE FIGHT AGAINST POLLUTION..........................34

Questions Asked About Current Issues................35
Prominence of Pollution Control Among Nine Issues....36
Prominence of Pollution Control and Concern About Environmental Damage......................37
Demographic Differences in Prominence of Pollution Control...............................39
Questions Concerning Feelings About the Fight Against Pollution...............................40
Feelings About Progress Made in the Fight Against Pollution...............................41
Does the Prominence of an Issue Measure Its Importance?..................................43
Questions About Personal Involvement................45
What People Do to Improve Their Environment..........46
Differences in Personal Involvement.................47
Questions About Priorities in Environmental Protection......................................49
Desired Allocation of Expenditures to Improve 50 the Environment.................................50
Summary...52

V. AWARENESS AND KNOWLEDGE ABOUT EPA....................54

Questions Asked.....................................54
Awareness of EPA....................................55
Familiarity with EPA................................57
Accomplishments Attributed to EPA...................57
Demographic Differences.............................59
Opinion and Attitude Differences....................59
EPA Awareness and the Fight Agains Pollution.........61
Summary...64

VI. WILLINGNESS TO PAY FOR SPECIFIC PROGRAMS TO IMPROVE THE ENVIRONMENT.....................................66

Summary of Averages Obtained........................68
Willingness to Pay for Automobile Emission Control...69
Feelings About Hypothetical New Car Price Increases..75
Correlation Ratios..................................84
Willingness to Pay Higher Electric Bills............87
Willingness to Pay for Recycling Solid Waste.........90
Willingness to Pay for Sewage Treatment.............92
Willingness to Pay for Eliminating Water Pollution from Food Production and Processing.................94
Feelings About a Factory Closing....................97
Preference Between Higher Prices and Higher Taxes...102
Summary...104

Page

VII. OVERALL WILLINGNESS TO PAY FOR A BETTER ENVIRONMENT...108

Question Asked...109
Meaning of Dollar Amounts...109
Multivariate Analysis of Overall Willingness to Pay..110
Guide to Charts and Analysis...112
Effect of Household Income on Willingness to Pay.....113
Effect of Concern About Fertilizer and Pesticide Damage...116
Effect of Concern About Radiation...118
Effect of Awareness of EPA...121
Effect of Concern About Solid Waste...123
Effect of Age...126
Effect of Concern About Strip Mining...128
Effect of Concern About Factory Effluent...130
Effect of Concern About Ground Level Noise...132
Effect of Concern About Automobile Exhaust...134
Summary...136

VIII. ATTITUDES TOWARD ENFORCEMENT...137

Questions About Enforcement...137
Positions Identified as One's Own...140
Acceptance, Rejection and Noncommitment...141
Reasons for Rejection...143
Concern About Environmental Damage and Position on Enforcement...144
Quality Rating of Environment and Position on Enforcement...145
Area Size and Position on Enforcement...146
Willingness to Pay and Position on Enforcement.......147
Reaction to Car Price Increases and Position on Enforcement...148
Likelihood of a Pragmatic Reaction to Enforcement....150
Summary...152

IX. INCOME, AREA SIZE AND CONCERN ABOUT THE ENVIRONMENT...154

Effect of Income Alone...155
Effect of Area Size Alone...156
Income and Area Size...156
Concern About the Environment Related to Income and Area Size...158
Summary...160

Page

Appendix A

Sampling and Weighting Procedures......................161

Appendix B

Notes on Multivariate Analysis........................169

Appendix C

Table of Sampling Tolerances..........................183

QUESTIONNAIRE

5

HIGHLIGHTS

This study deals with people's opinions about the environment and their attitudes toward the fight against pollution. It attempts to answer questions about the perception of the environment and its quality, the concern about pollution, the willingness to pay for a better environment and the attitudes toward enforcement. Relationships between opinions, attitudes and demographic factors are examined in a way designed to gain a better understanding of the complexities of public opinion and attitudes.

The data was gathered through 3,012 personal interviews with a representative sample of adults, 18 years of age and older, who reside in the continental United States. These interviews covered a broad range of topics concerning the environment. They were completed in June 1973.

Perception of the Environment and Its Quality

This study begins with a look at the popular meaning of the word environment. How do people define that word? How do they describe excellent and very poor environments?

People define the environment in terms of physical and social conditions that surround them. The emphasis varies and many people use several of these terms together.

Most frequently, an excellent environment is described as natural and relatively pollution-free surroundings. This idea is expressed by 58 percent of the people and is the most common regardless of age, occupation and area size. The idea of relatively pollution-free surroundings is dominant in today's perception of the environment.

Good social relations, including good relations with family and friends and neighbors, and the absence of crime, drugs, slums and other social ills are key elements in the definitions of an excellent environment given by 38 percent of the people.

Better housing and a better life style, including better jobs and better public services, are terms used by 30 percent of the people to describe an ideal environment.

Clearly, while pollution and the desire to eliminate it are dominant, other physical, social and cultural conditions continue to be integral elements in people's perception of their environment.

Turning to the quality of the environment, we find widespread dissatisfaction with it. People who feel their environment is getting worse outnumber those who feel it is getting better, particularly in metropolitan areas with more than one million people. In these areas, for every person who says the environment is getting better, there are two who say it is getting worse.

Only 27 percent of the adult population feel that their environment is "excellent" or "very good" and staying that way or getting better. At the other end of the spectrum, 29 percent feel their environment is "fair", "poor" or "very poor" and staying that way or getting worse.

The lower the income, the worse the quality of the environment. Of the people in households with an income of $15,000 or more per year, 40 percent rate their environment "excellent" or "very good". In middle-income households, $7,000 to $15,000 per year, 31 percent rate their environment "excellent" or "very good". At the $3,000 to $6,999 level, that percentage drops to 25 and when the income is $3,000 or less only 22 percent rate their environment "excellent" or "very good".

While the degradation of the environment affects the lower-income people most severely, it also affects large segments of middle and upper-income people. The percentages rating their environment less than "good", that is "fair", "poor" and "very poor", show this. At the income levels of $3,000 or less, that percentage is 43 percent; at the income levels of $15,000 or more, that percentage is 28. In fact, nearly one-half of the people who rate their environment "fair", "poor" or "very poor" enjoy above-average incomes. Since most of them live in metropolitan areas, where the degradation of the environment is worst, their dissatisfaction with the environment is not surprising.

Concern About Damage to the Environment

What are people concerned about? Are their concerns related to the size of the area where they live?

With few exceptions, people are concerned about the same sources of pollution and other types of damage to the environment regardless of area size, but the larger the population in the area, the worse the quality of the environment and the greater the concern about it. In metropolitan areas with one million or more people, 32 percent express a high degree of concern; in non-metropolitan areas, only 4 percent do.

Nationally, the top six concerns, as shown by the percentage who rate the damage to the environment "a lot" or "some", are: truck, bus and airplane exhaust (71%), automobile exhaust (69%), industrial smoke and gases (62%), untreated sewage (60%), solid waste (58%) and factory effluent (56%).

A comparatively high percentage of people, about 30 percent, have not formed an opinion about the damage done by the heating of rivers by atomic plants, radiation from nuclear facilities and strip mining.

Income has no effect on concern about damage to the environment. Looking at three area sizes -- metropolitan with one million population or more, metropolitan with fewer than one million and non-metropolitan -- within each area the level of concern about pollution and other sources of damage to the environment is about the same at all income levels. It is not true that the poor are not concerned; where pollution is a problem they are just as concerned as anyone else.

The Fight Against Pollution

In the four years since Congress passed the National Environmental Policy Act, this country's commitment to protect the environment has intensified. Do people feel we are making progress? Are people involved? What is their sense of priorities?

Asked about the fight against air pollution, only 4 percent of the people feel air pollution is not a big problem; 12 percent have not decided how big it is and 84 percent feel it is a big problem. In addition to saying it is a big problem, 13 percent say we are making a lot of progress, 36 percent say we are beginning to solve it, 29 percent say we are not trying hard enough and 6 percent say the air pollution problem will never be solved.

When asked about the fight against water pollution, only 7 percent of the people feel water pollution is not a big problem; 11 percent are undecided and 84 percent feel it is a big problem. In addition to saying it is a big problem, 15 percent say we are making a lot of progress, 34 percent say we are beginning to solve it, 30 percent say we are not trying hard enough and 5 percent say it will never be solved.

When it comes to the fight against solid waste, 13 percent of the people feel solid waste is not a big problem, 13 percent are undecided and 75 percent feel it is a big problem. In addition to saying it is a big problem, 18 percent say we are making a lot of progress, 30 percent say we are beginning to solve it, 23 percent say we are not trying hard enough and 4 percent say it will never be solved.

Clearly, there is a broad consensus on the view that air pollution, water pollution and solid waste are big problems. Feelings about solving these problems are generally optimistic but impatience with the progress made is quite common.

When it comes to hazardous pesticides, there is more uncertainty about the size of the problem: 15 percent of the people say it is not a big problem, 22 percent are undecided and 64 percent say it is a big problem. In addition to saying it is a big problem, 15 percent say we are making a lot of progress, 27 percent say we are beginning to solve it, 19 percent say we are not trying hard enough and 3 percent say it will never be solved. In other words, there is more uncertainty about pesticides and less impatience with their control than there is about air and water pollution and solid waste, but the majority feel it is a big problem and the prevailing feelings are optimistic about solving it.

The level of participation in the fight against pollution is impressive. Asked if they have done anything personally to improve the environment, 28 percent of the people report a variety of activities that include recycling and other solid waste disposal or removal efforts, cutting down the use of

11

the car or improving its operation, and working in or supporting environmental organizations.

Concerning priorities in environmental protection, people rank sewage treatment first, industrial air pollution control second and solid waste management third among a list of nine activities. Making car and truck engines that cause little or no pollution, finding safer pesticides and improving mass transportation rank fourth, fifth and sixth respectively. Completing the list, making sure atomic plants are safe, eliminating excessive noise and restoring lands affected by strip mining rank seventh, eighth, and ninth in spending priority.

Awareness of and Knowledge About EPA

Only 10 percent of the people can name the U. S. Environmental Protection Agency unaided. When the Agency's name is mentioned, another 48 percent say yes, they have heard of it. Thus a total of 58 percent are aware of EPA. The balance, 42 percent, have not heard of it.

Of the people who are aware of EPA, 40 percent say they know "almost nothing" or "nothing at all" about the Agency. Another 41 percent say they know "a little". The remaining 19 percent say they know "a fair amount" or "a great deal".

Concerning EPA's accomplishments, air and water pollution standards and control are mentioned most often.

People who are aware of EPA are more likely to be personally involved in fighting pollution than those who are not aware of the Agency. Among the aware, 39 percent report some meaningful activity such as recycling and the others mentioned above. Among the not aware, only 13 percent report being involved in these activities.

Generally, people who are aware of EPA are more likely to have made their minds up about environmental issues and are more willing to pay the cost of improving the environment.

Willingness to Pay for Pollution Abatement

Granted that people are concerned about the quality of their environment, the question that becomes paramount is whether they are willing to pay the cost of protecting it.

In order to explore their willingness to pay the cost of environmental protection, people were asked four series of questions: how much they are willing to pay for specific steps to reduce pollution, how they feel about hypothetical costs of automobile emission control, how they feel about a factory closing and how much they are willing to pay, overall, for a clean environment.

When asked how much they are willing to pay for antipollution devices in new cars, people volunteer an average of $62 per car. When it comes to higher operating costs because of increased car maintenance and lower efficiency, the average amount volunteered is $27 per year. The amounts volunteered increase with household income and with the degree of concern about damage to the environment done by motor vehicle exhaust.

This applies to every issue included in these series of questions. Both income and concern about damage to the environment affect people's willingness to pay for pollution abatement. Income has a greater effect than concern but the sum of the two effects is considerably greater than either one alone.

We have found that the amounts people volunteer to pay for automobile emission control are not the maximum amounts they will pay, but they are a good indicator of their relative willingness to pay higher costs than they had anticipated. The larger the amount they volunteer, the more likely they are to accept higher costs than anticipated.

A majority of car owners react favorably to an increase of $150 per car to pay for antipollution devices; 19 percent choose the phrase "I'll be delighted to pay" and 34 percent choose the phrase "It's only fair that if we drive cars we pay money to fight air pollution". As would be expected, the frequency of favorable reactions declines as the hypothetical price increases: from 58 percent at $150 to 28 percent at $300 and a low 15 percent at $500 per car. We estimate that, at 1973 prices, an average increase of about $250 per car would be the maximum amount to receive the support of a majority of car owners.

Turning to air pollution control at electric power generating plants, we find that people are willing to pay an average increase of 22 percent in their monthly bill. The average monthly bill reported is $17.42; the average monthly increase volunteered by people is $3.84. The larger the current monthly bill and the greater the concern about industrial air pollution, the larger the amount volunteered to pay for pollution abatement at electric power-generating plants.

Concerning solid waste, people volunteer to pay, on average, a 15 percent increase in handling costs in order to recycle it. People were told that the average cost of solid waste handling and disposal today is about $80 per family. When asked how much more they are willing to pay in order to have solid waste recycled, the average amount volunteered is a $12 increase per year. Again, the amount volunteered increases with household income and with concern about solid waste damage to the environment.

A question about sewage treatment was asked of three-fourths of the sample who have public sewer systems. They volunteer to pay a 20 percent increase in order to treat sewer waste. The average amount paid now is reported by these people to be $43 per year. They volunteer to pay, on average, an additional $8.80 per year for sewage treatment. The greater the amount people pay now and the greater their concern about water pollution, the larger the amount they volunteer to pay for sewage treatment.

Turning to the reduction of water pollution from food production and processing, people are willing to pay $37.43 per year; they volunteer $7.43 more than the estimated $30 mentioned to them as the increase in annual food costs the average family may have to pay in order to eliminate water pollution from these sources. Again, the amount volunteered increases with income and concern about pollution.

People were asked how they would feel about a factory closing in their area because of pollution problems. They were asked first to assume that people laid off by the closing would be left to find jobs on their own. Then they were asked to assume that the government would help retrain these people and find jobs for them.

When no special government help is assumed, 35 percent of the people find it hard to choose between "a little more pollution for a time" and "seeing people laid off". Usually, this kind of indecision reveals a lack of involvement in the issue presented in the question.

When special government help for the people laid off is assumed, only 19 percent find the choice difficult. Acceptance of the closing increases from 43 percent if no government help is assumed to 69 percent if help is assumed.

When confronted with the need to choose between higher prices and higher taxes in order to pay for pollution control, 62 percent of the people choose higher prices and 29 percent choose higher taxes. The remaining 9 percent refuse to choose. The preference for higher prices increases with income.

Overall Willingness to Pay for a Better Environment

Another measure of willingness to pay, which in the interview preceded the ones just discussed, was obtained by asking people how much they would be willing to pay a year to improve the quality of their environment. Inasmuch as people were not given any estimate of what the cost of improving the environment might be, the dollar amounts volunteered should not be taken literally. Instead, percentages above or below average are used. The purpose of this question was to provide a criterion measure for an analysis of the reasons that underlie people's willingness to pay. To what extent do income, age and concern about the environment influence the relative willingness to pay for a better environment? In order to measure each effect while holding the others constant, a multivariate statistical analysis technique was used here.

Household income is the best indicator of willingness to pay. On average, the more people can afford, the larger the amount they volunteer to pay. People in the $3,000 to $5,000 a year bracket volunteer to pay an amount 21 percent below average; those in the $20,000 and over bracket volunteer an amount 58 percent above average.

Age has a moderate effect on willingness to pay. People under 30 and those 55 to 64 volunteer amounts above average. To some extent, this reflects a greater concern among young people, but it also seems to relate to the life cycle of household expenditure patterns. For example, at ages 45 to 54, when many parents are paying the cost of college education for their children, the average amount volunteered to pay is 13 percent below average; at age 55 to 64, when many family obligations have been taken care of, the amount volunteered is 12 percent above average. People age 25 to 29 volunteer the largest amount, 18 percent above average.

Awareness of EPA is a rather good indicator of willingness to pay for a better environment. People who have not heard of EPA volunteer an amount 17 percent below the average. At the other end, those who can readily name the Agency unaided volunteer an amount 29 percent above average.

Of seven concerns about damage to the environment included in the analysis, concern about hazardous fertilizers and pesticides is most closely associated with willingness to pay for a better environment. People who say fertilizers and pesticides do "hardly any or no damage" volunteer an amount 26 percent below average; those who say they do "a lot" of damage volunteer to pay an amount 22 percent above average.

In other words, if people are classified by their concern about fertilizer and pesticide damage, differences in willingness to pay for a better environment are quite pronounced. By contrast, if people are classified by their concern about automobile exhaust damage, differences in willingness to pay for a better environment remain hidden. How can this be when, as shown above, a majority said they are willing to pay considerable amounts for antipollution devices? The answer reveals interesting differences between the issues.

Automobile exhaust is a settled issue. Since most people are concerned about automobile exhaust damage, the amount they volunteer to pay has to be close to average; separating the concerned from the unconcerned is not helpful to our understanding of why some people are willing to pay more than others for a better environment.

The most telling issues are those on which people are divided, the unsettled issues. In addition to hazardous fertilizers and pesticides, strip mining is also one of the better indicators of willingness to pay for a better environment. People who say strip mining does "hardly any or no damage" to the environment volunteer to pay an amount close to average; those who say it does "a lot" of damage volunteer to pay an amount 12 percent above average.

Concern about factory effluent has a similar effect. Those who say factory effluent does "hardly any or no damage" volunteer an amount 16 percent below average; those who say it does "a lot" of damage volunteer an amount 3 percent above average.

Concern about noise is not as good an indicator as the two just mentioned. Differences in amounts volunteered are rather modest when people are classified by their concern about ground-level noise.

11

Concern about radiation is a very uncertain indicator of willingness to pay. Many people are not concerned about it and volunteer an above-average amount, indicating that many people who care about a better environment do not believe radiation from nuclear facilities is causing any damage to the environment. A few people say it does "some but not a lot" of damage and also volunteer to pay an amount above average. Those who say it does "a lot" of damage volunteer to pay a below-average amount, suggesting that their concern reflects anxiety and is not backed up by a determination to pay for a better environment.

Anxiety also seems to accompany people's concern about solid waste; so much so that the greater the concern, the lower the amount volunteered to pay.

Since in measuring the effect of each variable the other variables were held constant, this analysis reveals the net effect of each of the ten factors included in it.

Attitudes Toward Enforcement in Pollution Abatement

Enforcement is closely related to the cost of pollution abatement and to the consequences of pollution. The stricter the enforcement, the higher the cost; the more permissive the enforcement, the greater the damage or the risk of damage to health, property and the environment in general.

This dilemma was presented to people in a series of nine statements representing a range of positions on enforcement ranging from extremely strict at one end ("regardless of what it costs and of who gets hurt by the cost") to extremely permissive at the other end ("regardless of what may happen to our health or to the environment"). Moderately and mildly strict and permissive positions were stated between the extremes; the middle ground position ("it is hard to decide whether to force...or let them do it voluntarily") was at the center.

Although people lean toward strict enforcement, no clear majority is found on either side of the choice between strict and permissive enforcement in pollution abatement. The extreme positions are rejected by a majority and this is not surprising. What is significant is to find each of the moderate positions rejected by one-third of the people and to find the middle-ground position rejected by only one-fourth of them. These findings suggest that the consequences of enforcement have not been debated enough to stimulate the formation of attitudes among many people.

Nevertheless, interesting differences emerge when people are classified by their views on the environment. We find that concern about environmental damage, rating one's environment as less than good, and living in a metropolitan area increase the probability of favoring strict enforcement in pollution abatement. It is also worth noting that the greater the amount volunteered to pay for a better environment, the stricter the level of enforcement favored. Attitudes toward enforcement are also quite consistent with the reactions to hypothetical car price increases to pay for emission control.

It appears that people are approaching the enforcement issue pragmatically. When faced with the facts, they balance the cost of pollution abatement and its benefits and then take a stand. Once they know what the cost will be, people will decide whether they want to pay for strict enforcement or not; they are not inclined to approach the issue in terms of voluntary compliance versus mandatory controls.

As environmental protection proceeds to meet statutory quality standards, the cost issue will become increasingly clear to the people. One impression left by this study is that the people are ready to meet the cost of a cleaner, better environment.

The level of concern about the environment varies a great deal by area size. The relationship between concern, willingness to pay and attitudes on enforcement suggest that in areas where a particular form of environmental degradation is not evident or does not seem serious, the corresponding environmental quality standards are likely to be rejected until the eventual consequences of lower standards become understood.

As environmental quality standards are enforced, people will need reliable, objective information about costs and about the benefits they can reasonably expect from paying these costs.

I. INTRODUCTION

The National Environmental Policy Act of 1969 declared "a national policy which will encourage productive and enjoyable harmony between man and his environment". That Act and subsequent legislation have accelerated this country's effort to protect itself from the effects of environmental pollution. The executive, judicial and legislative branches of our State and Federal governments have made and continue to make decisions with far-reaching impact on the quality of our lives.

The search for this productive and enjoyable harmony is not free of tension. On the one hand, environmental protection poses real and imaginary threats to productivity, some jobs, the return on invested capital and the amount of energy at our disposal, to name a few. On the other hand, public concern over the unhealthy effects of pollution and the desire for a more enjoyable environment generate pressures to produce tangible results. In the ensuing debate, it could happen that only the loudest voices are heard, but the attainment of a national environmental policy ultimately depends on the "consent of the governed".

Why This Study Was Done

The United States Environmental Protection Agency has been assigned a crucial role in the pursuit of the national environmental policy declared by Congress, a role that requires acting in close coordination with the American public. EPA needs to know people's opinions about environmental issues and their attitudes toward solutions to environmental problems.

With this in mind, this study was conceived with three basic themes, namely the people's perception of environmental problems and priorities, their willingness to pay for a better environment and their attitudes about enforcement of antipollution measures.

One of EPA's tasks is to research the causes of pollution and the techniques of pollution control. The feasibility of pollution control depends not only on the state of technology but also on the people's willingness to pay for what is technologically possible. Until recently we thought of clean air and water as free commodities, an assumption that was true when the world had a much smaller population. While we know better now, we have yet to find a practical and universal method to put a price on clean air and water; the only way to learn how much people are willing to pay for clean air and water is to ask them.

Another EPA task is to set standards, sometimes in cooperation with the States. This task is dependent on public acceptance of the sacrifices required to achieve these standards and public support for various programs. Because the price to be paid for environmental protection is often unclear to people, the state of public opinion cannot be measured by merely asking people whether or not they want a better environment; it must be measured also by asking how much they are willing to pay for the benefits of environmental protection. Similarly, the expression of people's priorities concerning environmental protection programs must be based on the premise that resources are limited, that we cannot do everything at once.

Once standards are set, EPA is also charged with enforcing them, a task sometimes shared with the States. Although these standards have the force of law, their enforcement is dependent on the will and determination of the people to have the standards adhered to. The state of public opinion about the choice between enforcement and voluntary action in fighting pollution is an important element in the study of environmental issues, one that may well grow in importance as the cost of environmental protection becomes more visible.

While these three themes explain the thrust of this study, they do not fully describe its scope nor its specific contents. A brief outline of these will assist the reader at this point.

Scope Of This Survey

The 3,012 persons who answered this survey were asked some seventy questions about environmental matters. These questions can be sorted into three types: opinions, attitudes and background.

- Opinions The term is used here to include beliefs or conclusions held by people concerning the following:
  - Importance of air and water pollution control in relation to other current issues.
  - Rating of the quality of their environment.
  - Direction of change in the quality of their environment.
  - Rating of 20 alleged causes of damage to the environment.
  - Rating of 13 of these causes on their effect on people's health.
  - Optimism or pessimism about the progress being made in the fight against air pollution, the fight against water

pollution, in controlling the use of hazardous chemical pesticides and finding safer ones, and in finding better and more sanitary ways of disposing of solid waste.

- Preference between higher prices and higher taxes as alternative ways of paying for improving the environment.

- Attitudes The term is used here to include the people's feelings or states of mind with regard to the solution of environmental problems as follows:
  - Priorities, that is given a limited amount of money to improve the environment and a list of nine environmental protection activities, how much, if anything, should be spent on each.
  - Willingness to pay, in total, to improve the quality of the environment and specifically to eliminate or reduce pollution from power generation, solid waste disposal, food production and processing, sewage treatment and automobiles.
  - Feelings about hypothetical increases in new car prices of $150, $300 and $500 to pay for new antipollution devices.
  - Feelings about a hypothetical factory closing, related to antipollution enforcement, under two assumptions, namely that people were given or not given help to find new jobs.
  - People's attitudes toward enforcement measured by their reactions to seven statements ranging from a position of extreme antipollution enforcement at one end to a neutral position in the middle and extreme laissez faire at the other end.

- Background This term is used here to include a variety of characteristics of the person interviewed:
  - Meaning of the word environment and description of excellent and very poor environments.
  - Awareness of EPA.
  - Rating of personal knowledge about EPA.

26

- Awareness of specific EPA accomplishments.
- Amount of monthly electric bill and of annual sewer bill, if any.
- What, if anything, this person has done to improve the environment.
- Awareness of a factory closing rather than spending money to stop polluting the air or water.
- Age, sex, education, occupation, household income and other demographic characteristics.
- Membership in various types of organizations, some of which actively advocate or promote environmental protection.

A complete list of items used in the questionnaire, a description of each item and a reference to the number of the corresponding question as it appears in the questionnaire will be found in Appendix B. The questionnaire itself will be found at the end of this volume.

The Study Design

The 3,012 persons interviewed were selected among those 18 years of age and older residing in areas selected according to a multi-stage probability sampling procedure which results in a representative cross-section of the adult population in the continental United States. Details of the sampling plan and of the appropriate weighting procedures for tabulations of results are described in Appendix A.

The tables of data show a total of 3,038 interviews rather than 3,012. This slight discrepancy is the result of weighting procedures designed to adjust for generally small discrepancies between the sample and the Census distribution of the population. When a table is based on less than the total sample, the base is shown in parentheses at the top of each column of numbers.

Interviews were conducted in the homes of respondents by trained and supervised interviewers using a printed questionnaire which included the usual question and answer methods as well as some self-administered questions which the respondent answered with pencil in hand. A variety of questioning techniques was selected for this survey in order to obtain reliable and penetrating responses to the topics being studied. Questions were designed to give respondents an opportunity to express a full range of opinions and attitudes without regard to current policy.

Interviewing began on May 15 and ended on June 22, 1973.

This study of environmental opinions and attitudes was designed to go beyond the polling or counting of heads on a series of questions. In addition to the head count on each question, it was felt necessary to provide an analysis of relationships between answers to various questions. These relationships provide a deeper understanding of what the public is saying about a relatively complex issue.

II. PEOPLE'S PERCEPTION OF THE ENVIRONMENT AND ITS QUALITY

The word environment is used a great deal. We speak of an environmental crisis, of environmental protection, of learning environments and of good and bad environments. In every case we are referring to a complex of conditions which may be physical, social or psychological.

The Federal, State and local governments have had a significant impact on our environment for a long time with legislation and expenditures affecting housing, highways, safety, health, education and many other living conditions. In recent years we have developed a greater awareness of the complex relationships between conditions that in the past we had often treated as separate from each other and we have a National Environmental Policy Act, a federal Environmental Protection Agency, environmental state offices and many citizen groups devoted to a better environment.

This survey begins with a look at the popular meaning of environment. Does this word have the same meaning to young and old, rich and poor? Does the quality rating vary according to the meaning each respondent attaches to the word environment?

Questions Asked about the Perception of the Environment

People were asked three questions to explore the meaning of environment:

- The word environment is used a great deal nowadays. What does the word environment mean to you?
- How would you describe your idea of an excellent environment?
- How would you describe your idea of a very poor environment?

These questions were intended to learn which meanings are salient among people today. They also provided a check against the possibility of misinterpreting people's answers to questions that include the word environment.

Popular Meaning of Environment

Answers to these three questions have been summarized in Table II-1 into four categories: (1) natural surroundings and pollution-related meanings; (2) housing and life style; (3) social relations, encompassing relationships between family, friends and neighbors and such social ills as crime, slums and alienation; and (4) surroundings in general and miscellaneous definitions too infrequent to list separately.

TABLE II-1

MEANINGS OF THE WORD ENVIRONMENT AND OF EXCELLENT AND VERY POOR ENVIRONMENTS

	Word Meaning	Idea of Excellent	Idea of Very Poor
	%	%	%
Natural surroundings and pollution related	35	58	48
Housing and life style	36	30	51
Social relations	23	38	45
Surroundings in general and miscellaneous	41	12	7

The totals in Table II-1 exceed 100 because many people gave more than one definition. It is interesting that the frequency of the word surroundings and other general expressions is highest when defining the word environment and diminishes greatly when describing excellent and very poor environments. The most common description of an excellent environment is the absence of pollution (clean air, clean water, etc.), but better housing and life style (including social and public services) and better social relations are mentioned often enough to reveal a broad public concern.

Demographic Differences in the Idea of an Excellent Environment

The question examined here is whether the perception of one's environment varies according to personal background and conditions. We will look at differences in age, education, occupation, income and place of residence. Detailed data for these groups will be found in Volume II.

For the sake of brevity, we will examine only differences in the description of an excellent environment. As shown above, those descriptions are more specific than the definitions of environment.

Fourteen demographic groups shown in Table II-2 reveal small to medium differences in their description of an ideal environment. A pollution free, natural environment is more often the ideal among younger, college educated, white collar, higher income people and those residing in metropolitan areas. Yet, with the sole exception of those with annual household incomes under $3,000, a majority among all groups describe an excellent environment as one with less pollution or a more natural one.

On average, descriptions of an excellent environment in terms of housing, life style and social and public services are given only half as often as pollution related descriptions. They are, as would be expected, more frequent among older, less educated and lower income groups. A similar pattern occurs in the frequency of descriptions in social relationships.

TABLE II-2

DEMOGRAPHIC DIFFERENCES IN DESCRIPTION OF EXCELLENT ENVIRONMENT

	Natural and Pollution Related	Housing and Life Style	Social Relations
	%	%	%
Total Sample	58	30	38
Age:			
18 -34	64	25	34
35 and over	54	32	40
Education:			
College	69	26	34
No college	52	32	40
Occupation of Household Head:			
White collar	67	26	34
Blue collar; farm	55	30	39
Not employed	49	34	42
Household Income:			
Under $3,000	41	33	42
$3,000 - $6,999	53	32	39
$7,000 - $14,999	60	32	38
$15,000 and over	69	26	35
Area Type and Size:			
Metropolitan, 1MM and over	61	32	37
Metropolitan, 50M - 1MM	57	32	40
Non-metropolitan	53	24	36

We now turn to people's rating of their environment as it is today and as it has changed during the past twelve months. We will also examine how quality ratings vary according to the individual's perception of the environment.

Questions Asked about the Quality of the Environment

The following two questions provided the information discussed in this section:

- Some people talk about the quality of our environment. Would you say that the environment you live in is excellent, very good, good, fair, poor, or very poor?

- Would you say that during the past twelve months the environment you live in has been getting better, staying about the same getting worse or don't you know?

Environmental Quality Ratings

The frequency of each rating is shown in Table II-3. The figures speak for themselves.

TABLE II-3

ENVIRONMENTAL QUALITY RATINGS

	%
Excellent	9
Very good	21
Good	34
Fair	25
Poor	6
Very poor	3
No answer	2

Opinions about quality change during the past twelve months are shown in Table II-4.

TABLE II-4
ENVIRONMENTAL QUALITY CHANGE DURING PAST TWELVE MONTHS

	%
Getting better	15
Staying about the same	59
Getting worse	21
Don't know	5

The majority feel that the quality of their environment is staying about the same. Of the people who feel that it is not staying the same, those who say their environment is getting worse outnumber those who say it is getting better.

Combining the answers to both questions results in a composite rating showing both the opinions about today's quality and the direction of change. Table II-5 shows these combinations based on the total sample.

TABLE II-5
ENVIRONMENTAL QUALITY AND DIRECTION OF CHANGE

	Today's Quality			
	Excellent, Very Good	Good	Fair, Poor, Very Poor	Total
	%	%	%	%
Change Past 12 Months				
Getting better	5	6	4	15
Staying about the same	22	21	16	59
Getting worse	2	6	13	21
Total	29	33	33	95

This composite view of environmental quality and how it is changing presents a disturbing picture. Nearly one third (29% to be exact) of the adult population in the continental United States feel that their environment is fair, poor or very poor and that it is staying that way or getting worse. Not quite another third (27%) feel their environment is excellent or very good and staying that way or getting better. Of the remaining third, the majority find it good or changing in that direction.

Who are the people who rate their environment on the lower end of the scale? Does their definition of environment throw some light on their ratings? The frequency of various quality ratings is about the same regardless of how people define their environment. The largest difference is about two percentage points. Conversely, people who say their environment is excellent or very good do not define it differently from those who say it is fair, poor or very poor. (See Volume II for detailed tabulations). Clearly, definitions of the environment do not explain quality differences. Let us then look at demographic factors.

Demographic Differences in Environmental Quality Ratings

Of the demographic factors analyzed -- age, education, occupation, income and area type -- only income and area type show large differences in environmental quality ratings and direction of change. The most striking differences, shown in Table II-6 are between residents of metropolitan areas, particularly those with more than one million people, and residents of non-metropolitan areas.

TABLE II-6

ENVIRONMENTAL QUALITY BY TYPE OF AREA

	Metropolitan Areas		
BASE:	Over One Million (1250)	50,000 to One Million (991)	Non-Metropolitan (797)
	%	%	%
Quality Rating			
Excellent, very good	23	32	38
Good	33	35	34
Fair, poor, very poor	43	32	24
No answer	1	1	4
Change Past 12 Months			
Getting better	12	16	16
Staying the same	55	60	65
Getting worse	28	19	12
Don't know	5	5	7

Income also reveals significant differences; the lower the household income, the worse the rating of their environment, as shown in Table II-7. Interestingly, the rating of change during the past twelve months varies relatively little among income groups.

TABLE II-7

ENVIRONMENTAL QUALITY BY INCOME LEVEL

	Annual Household Income			
	Under $3,000	$3,000 to $6,999	$7,000 to $14,999	$15,000 and Over
BASE:	(333)	(585)	(1144)	(640)
	%	%	%	%
Quality Rating				
Excellent, very good	22	25	31	40
Good	28	31	37	32
Fair, poor, very poor	43	42	31	28
No answer	7	2	1	-
Change Past 12 Months				
Getting better	12	12	17	15
Staying the same	56	59	60	61
Getting worse	21	23	20	20
Don't know	11	6	3	4

It is not surprising that people with lower incomes rate their environment fair to very poor more frequently than people with higher incomes. What is striking is that only 40 percent of those with incomes of $15,000 or more rate their environment excellent or very good and that as many as 28 percent rate it fair to very poor. We must conclude that major elements of what people consider a good environment are now beyond the reach of both rich and poor. This conclusion is supported by the small differences in opinion about changes in the environment between income levels. Regardless of income, about one-fifth of the people feel that their environment is getting worse.

Summary

People define the environment in terms of physical and social conditions that surround them. The emphasis varies. The most frequent (58%) description of an excellent environment is given in terms of natural, pollution-free surroundings. The ideal of pollution-free surroundings is dominant in today's perception of the environment.

Next in frequency (38%) are the descriptions in terms of good social relations, including relations with family, friends and neighbors and less crime and slums. The ideal environment includes social as well as physical conditions. Many people used both in defining the environment and its quality.

Somewhat lower in frequency (30%) we find descriptions of an ideal environment in terms of better housing and life style, including better jobs and better social and public services.

Public opinion about the quality of the environment reveals some striking facts. Only 27 percent of the adult population feel that their environment is excellent or very good and staying that way or getting better. At the other end of the spectrum, 29 percent feel their environment is fair to very poor and staying that way or getting worse. The remaining 44 percent fall in the middle; about one-half of them (21%) saying that their environment is good and staying that way and the others expressing a variety of opinions.

Those who feel the environment is getting worse outnumber those who feel it is getting better, particularly in metropolitan areas with more than one million people where the ratio is better than two to one.

Opinions about the environment getting better, getting worse or staying the same do not vary between income levels; whatever their income, about one in five people feel that their environment is getting worse.

L/D.

III. OPINIONS ABOUT ENVIRONMENTAL DAMAGE AND HEALTH EFFECTS

The purpose of environmental protection laws enacted these last few years is to promote the public health and welfare. As a result, environmental quality criteria are often based on the adverse effect of pollutants on public health and welfare. Logic suggests that public support for these criteria should bear a close relationship to the public's perception of threats to its health and welfare.

The findings described in Chapter II reveal widespread dissatisfaction with the quality of the environment and suggest reasons for that dissatisfaction. We learned, for example, that pollution plays a large role in people's perception of their environment and its quality. In this chapter we will see how people evaluate a variety of conditions and events that can affect the quality of their environment and their health.

To gather the opinions examined in this chapter we chose a five-point rating scale that ranges from "a lot" to "none at all" and "not sure", and asked people to apply it to a list of items describing conditions and events that either have demonstrable adverse effects on the environment or have been said to have such effects. Untreated sewage, automobile exhaust and land use are examples of the items selected for rating.

Questions Asked

The wording of the two questions which were separated by several pages, was as follows:

- I am going to read a list of things people have mentioned as damaging our environment. Using the words on this card, I would like you to tell me how much damage each one causes to the environment in this part of the country in your opinion. [The card had the following list of expressions to be used : A lot of damage, Some but not a lot of damage, Only a little damage, Hardly any damage or none at all, Not sure how much damage.]
- Now I'm going to read a list of things that are said to affect people's health. For each one I read, I'd like you to tell me to what extent you believe people's health is affected by each one of these things. To give your answers, please use the words on this card that come closest to expressing your opinion. To what extent is people's health affected by... [The card had the following list: A lot, Some but not a lot, A little bit, Not at all, Not sure].

Of the items read to the respondent, thirteen were common to both questions and seven were used with the environmental damage question only. The two lists of items follow. They are not necessarily in interview sequence and they are identified by a letter for easy reference, for in the data tables the wording of these items has been shortened.

Common Items

a. Untreated sewage from cities and towns

b. Oil spills from tankers, pipelines, storage tanks, etc.

c. Fertilizers, insecticides and weed killers washed away from farms and lawns

d. Untreated liquid wastes from factories

e. Garbage, trash and other solid waste

g. Septic tanks of private homes

h. Burning of trash at farms, homes, apartments and town incinerators or dumps

i. Exhaust from private automobiles

j. Exhaust from trucks, buses and airplanes

k. Smoke and gases from factories, refineries and electric power plants

l. Radiation from nuclear facilities

s. Noise from traffic, equipment and machines

t. Noise from airplanes

Environmental Damage Only Items

f. The heating of rivers by atomic power plants

m. Use of land for housing

n. Use of land for large office buildings

o. Use of land for factories

p. Strip mining

q. Cutting down of trees

r. Growth of population in this area

Each of these items was read by the interviewer to the respondent who held the card with the rating scale ranging from "a lot" to "not sure".

As each item was read, the respondent selected the appropriate phrase to express his opinion.

Ratings of Damage to the Environment

The frequency with which each of the twenty items was rated as doing "a lot", "some", "a little" and "no damage" is shown in Table III-1 as a percentage of the total sample. The "not sure" column shows how many people have not formed an opinion. Thus, except for small rounding errors, each row adds up to 100 percent of the sample.

The most noticeable feature of the data is the range of frequencies within each rating level. Leading the list, truck, bus and airplane exhaust is rated as doing "a lot" of damage by 51 percent of the people. It is followed closely by automobile exhaust which 46 percent say does "a lot" of damage to the environment. Septic tanks are at the bottom of the list; only 10 percent of the people say they cause "a lot" of damage. Conversely, truck, bus and airplane exhaust is rated as causing "hardly any or no damage" by only 15 percent; 42 percent rate septic tanks as causing "hardly any or no damage".

The last column shows the frequency of "not sure" ratings, indicating how may people have not formed an opinion on the damage caused by each item listed. Three items stand out: strip mining, radiation from nuclear facilities and the heating of rivers by atomic plants; about one-third of the people are "not sure" about these items.

TABLE III-1

FREQUENCIES OF ENVIRONMENTAL DAMAGE RATINGS

	A Lot	Some But Not a Lot	Only a Little	Hardly Any/None	Not Sure
	%	%	%	%	%
j. Truck, bus, plane exhaust	51	20	10	15	3
i. Automobile exhaust	46	23	12	15	4
k. Industrial smoke, gases	43	19	8	24	5
a. Untreated sewage	42	18	9	18	14
d. Factory effluent	42	14	8	23	13
e. Solid waste	35	23	13	23	6
g. Cutting trees	31	18	13	30	8
b. Oil spills	29	16	12	32	12
s. Ground level noise	26	22	18	31	4
p. Strip mining	23	8	5	36	28
r. Population growth	22	21	15	33	9
c. Fertilizers, pesticides	21	23	16	23	16
h. Trash burning	20	22	18	32	6
m. Use of land for housing	17	18	13	39	13
t. Airplane noise	17	17	18	43	5
o. Use of land for factories	16	19	14	39	13
n. Use of land for office bldgs.	14	18	13	43	13
f. Heating of rivers	14	10	7	39	31
l. Radiation	13	7	7	44	29
g. Septic tanks	10	14	14	42	19

Environmental Damage and Area Size

We will look at area differences in two ways: we will compare the rankings of things people are concerned about and we will compare the levels of concern about each one of those things.

Table III-2 contains the following information. For each of three area types -- metropolitan areas with one million or more people, metropolitan areas with fewer than one million and non-metropolitan areas -- the table shows the percentage of people rating each item as doing "a lot" of damage and, next to it, the rank of that item from #1 for the highest percentage to #20 for the lowest. With the aid of these rankings one can readily identify, for example, the five top concerns in each type of area. The last column in Table III-2 shows the difference between metropolitan areas with one million or more and non-metropolitan areas in the percentage of "a lot" of damage ratings. Thus the differences in levels of concern about each item can be readily seen. The items are listed from highest to lowest difference. The level of concern in non-metropolitan areas is lower than in metropolitan areas for all items.

Table III-2 makes it easy to see that air pollution from engine exhaust and industrial sources arouses much greater concern in metropolitan areas than in non-metropolitan areas, but in both areas they rank these among the top third sources of damage to the environment.

46

Untreated sewage and solid waste are rated among the top third sources of environmental damage in all types of areas and the degree of concern is not very different by area size.

Industrial water pollution (represented by factory effluent) also ranks high in all types of areas but the level of concern is much higher in metropolitan areas.

Fertilizers and pesticides rank comparatively high in non-metropolitan areas only.

Land use ranks relatively low among the twenty items regardless of area size.

Ground level noise ranks about midway in the three types of areas and it ranks higher than airplane noise.

With few exceptions, such as fertilizers and pesticides, people are concerned about the same sources of environmental damage regardless of the size of the area where they live, but the level of concern is nearly always higher in the more populated areas.

47

TABLE III-2

DIFFERENCES IN ENVIRONMENTAL DAMAGE RATINGS BY AREA SIZE

Percentage of people rating damage "a lot" and rank of each item according to that rating

	Metropolitan Area 1,000,000 and Over		Metropolitan Area 50,000-1,000,000		Non-Metropolitan		Difference Large Met. & Non-met.
	%	Rank	%	Rank	%	Rank	% pts.
j. Truck, bus, airplane exhaust	65	1	52	1	28	2	37
i. Automobile exhaust	58	2	48	2	24	5	34
k. Industrial smoke, gases	54	3	45	4	24	6	30
r. Population growth	32	10	24	12	5	18	27
d. Factory effluent	50	4	44	5	26	3	24
g. Cutting trees	39	7	32	7	17	8	22
s. Ground level noise	34	9	27	9	12	11	22
t. Airplane noise	25	12	17	15	4	19	21
b. Oil spills	36	8	30	8	16	9	20
m. Use of land for housing	24	13	18	14	5	17	19
n. Use of land for office bldgs.	20	17	14	19	3	20	17
e. Solid waste	42	6	36	6	25	4	17
o. Use of land for factories	23	15	17	16	6	16	17
a. Sewage	45	5	47	3	30	1	15
h. Trash burning	23	14	25	10	11	12	12
p. Strip mining	26	11	25	11	15	10	11
l. Radiation	14	19	15	17	7	15	7
f. Heating of rivers	16	18	14	18	9	13	7
c. Fertilizers, pesticides	23	16	23	13	18	7	5
g. Septic tanks	9	20	11	20	8	14	1

Environmental Quality Ratings and Concern About Damage

It seems reasonable to postulate that people who rate a large number of sources as doing a lot of damage are more concerned about environmental damage than those who rate only a few of them that high. It follows that a simple count of how many times a person used the highest rating ("a lot" of damage) should provide a simple summary measure of that person's concern about environmental damage.

After studying the frequency with which each item was rated at that level, survey respondents were assigned a concern score as follows:

Concern Score	Items Rated "A Lot of Damage"	Percent of Sample
High	9 - 20	23%
Medium	3 - 8	44%
Low	0 - 3	33%

In Chapter II we discussed how people rate their environment. It will be recalled that about one third of the people rated it excellent, or very good, another third rated it good and the remaining third rated it fair, poor or very poor.

We can now relate that quality rating to the concern score and learn whether it relates to the quality of the environment people live in. A priori, one would expect people who live in excellent or very good environments to be less concerned about environmental damage, for both scores refer to their own environment. This expectation is borne out by the data. As Table III-3 shows, the better the environment the lower the concern score; the worse the environment, the higher the concern score.

TABLE III-3

RELATIONSHIP BETWEEN THE QUALITY OF THE ENVIRONMENT
AND CONCERN ABOUT ENVIRONMENTAL DAMAGE

	Rating of the Environment		
	Excellent, Very Good	Good	Fair, Poor, Very Poor
BASE:	(914)	(1032)	(1039)
	%	%	%
Damage Score			
High	15	21	33
Medium	41	45	46
Low	44	34	21

This is an important finding, for it is sometimes assumed that the environment is primarily a concern of affluent people. Instead, we find that the lower the income, the lower the quality rating of the environment; and the lower the quality, the greater the concern about environmental damage.

Ratings of Effect on People's Health

As described at the beginning of this chapter, thirteen of the twenty items rated on damage to the environment were also rated on their effect on health. The elimination of seven items from the health ratings question does not imply that the items eliminated have no possible effect on health. They were eliminated because it was expected that most people would have difficulty rating them on health effects.

The frequency with which each of the thirteen items was rated as affecting people's health "a lot", "some", "a little" or "not at all" is shown in Table III-4 as a percentage of the total sample.

The thirteen items are listed in descending frequency of "a lot" ratings, thus the relative position of each item can be readily seen. Untreated sewage and truck, bus and airplane exhaust head the list with 56 percent of the people saying they affect people's health a lot. Thus Table III-4 provides a list of perceived environmental hazards ranked according to public opinion about their relative health effects.

The "not sure" column provides a measurement of the extent to which people have formed opinions on this issue. People are most likely to be uncertain about the health effect of radiation from nuclear facilities and septic tanks probably because they lack experience or information on these alleged health hazards.

TABLE III-4

FREQUENCIES OF HEALTH EFFECT RATINGS

	A Lot	Some but Not a Lot	Only a Little	Hardly Any/None	Not Sure
	%	%	%	%	%
a. Untreated sewage	56	22	10	4	8
j. Truck, bus, airplane exhaust	56	24	12	4	4
k. Industrial smoke, gases	55	23	10	6	5
i. Automobile exhaust	50	25	16	5	4
d. Factory effluent	50	24	10	5	10
e. Solid waste	47	27	15	7	4
b. Oil spills	32	28	18	11	12
c. Fertilizers, pesticides	29	30	22	7	11
h. Trash burning	27	28	26	12	6
l. Radiation	24	14	11	19	32
s. Ground level noise	21	28	28	16	7
t. Airplane noise	17	23	29	23	7
g. Septic tanks	15	21	22	24	19

NOTE: The letters preceding each item are the ones used in Table III-1 and in the verbatim listing of items provided at the beginning of this chapter. These letters do not necessarily coincide with those used in the questionnaire (Q11).

Comparison of Environmental Damage and Health Effect Ratings

We have now looked at two measures of public concern about the environment. How do these measures compare? Is one better than the other? These questions are relevant to this study because of the emphais on public health in environmental protection.

To begin with, a comparison of Tables III-1 and III-4 shows that the frequencies of "a lot" ratings are higher for health effects than for environmental damage ratings. When rating ten of the thirteen items, more people chose to say "a lot" when rating health effects than when rating environmental damage. The two exceptions are airplane noise (no difference) and ground level noise (health rating is five points lower).

At first sight this seems to suggest that people have a greater concern about the health effects of pollution than about its broader impact on the environment (expressed as "damage" in this survey).

An alternative hypothesis is that people responded differently to the two questions because of their wording. It is possible that the word health evoked anxiety in some people and because of that anxiety they shifted their answers toward the upper end of the scale.

Left with these two hypotheses, we tested the two questions statistically by measuring their ability to explain variance in several criterion dimensions to be discussed later. With rare exceptions, the environmental damage ratings explained more variance than the health effect ratings. Since the criterion dimensions included willingness to pay and priorities, which should relate to personal concern about environmental damage, explained variance is an appropriate test.

We conclude that the environmental damage question is the more reliable of the two as a measure of public concern about the environment. The damage concept incorporates the health effect but it does not arouse as much anxiety; as a result it produces a more meaningful measurement of public opinion.

Summary

People were asked to rate twenty alleged sources of environmental damage. Two ratings were used: damage to the environment and effect on people's health. The damage rating provides a more reliable measure of public opinion.

The environmental damage ratings provide a measure of how many people have formed an opinion about conditions and events that damage the environment and a comparative measure of concern about that damage.

Concern about environmental damage is greater in high-density population areas than in low-density ones, but people in all areas rank their concerns in approximately the same order. With the exception of fertilizers and pesticides, people are concerned about the same pollution sources regardless of population size but the level of concern increases with population size. In the case of fertilizers and pesticides, concern about damage ranks much higher in non-metropolitan than in metropolitan areas.

The top five concerns in metropolitan and non-metropolitan areas are: exhaust from internal combustion engines, industrial smoke and gases, factory effluent, solid waste and sewage.

Relating environmental damage scores to environmental quality ratings, it is found that the better the environment the lower the level of concern about damage to it; the worse the environment, the higher the level of concern about it.

IV. THE FIGHT AGAINST POLLUTION

In the preceding two chapters we found evidence of widespread concern about the quality of the environment. In this chapter we will look at public opinions and attitudes concerning the fight against pollution. Where does pollution control rank among other issues of the day? Do people feel we are making progress? Are people involved? What is the public's sense of priorities?

Every day, a number of issues claim our attention. The amount of information made available is more than we can bear; inevitably, we sort it out and simplify it. This process of sorting out and simplifying is not only personal but social as well. Some issues that were prominent yesterday seem forgotten today; others linger until they are resolved. The study of public opinion must try to tell the difference between the changes in tentative opinions and changes in deeper feelings and attitudes that reveal desire and support for change.

In this chapter we will discuss four measures that are related in the sense that they probe the public's stand on the fight against pollution at several depths. We begin with the prominence of the issue in the context of other issues of the day. As other issues come and go, that prominence is, by definition, only a surface measure of public opinion. This is followed by an exploration of feelings about the fight against four types of pollution. We want to learn how many people feel these problems are big or small and how many feel optimistic or pessimistic about the progress in fighting pollution. Next, we will see how many people have done something to fight pollution and we will consider whether or not this is a good measure of involvement. Finally, we will look at the spending priorities people assign to nine activities representing a broad range of environmental protection measures.

Questions Asked About Current Issues

The question about the prominence of current issues was asked as follows:

- Here's a list of issues many people find important. Would you please read the whole list first and then choose three issues that, in your opinion, are most important today.

The following list of issues was given to the respondent:

State of the economy
Control of air and water pollution
Controlling inflation
Taxes and government spending
Crime
Drugs
Racial relations
Student unrest
Education

Each respondent named three issues without ranking them in relation to each other. Four different lists were used to rotate item positions.

Prominence of Pollution Control Among Nine Issues

With nine issues to choose from, if people had named three at random each issue would have been chosen by 33 percent of the people. In fact people did not choose at random. Taxes and government spending and drugs turned out to be the two most prominent issues and each one was chosen by 49 percent of the people. Crime and control of air and water pollution came next in prominence; each one was chosen by 43 percent of the people. Student unrest, no longer an issue at the time of the survey, was chosen by 4 percent of the people. The nine issues are shown in Table IV-1. Detailed data by various classifications is included in Volume II.

TABLE IV-1

THREE MOST PROMINENT ISSUES WHEN THE SURVEY WAS TAKEN

	Frequency of Choice as One of Three	For Each Issue, % Who Also Chose Pollution Control
	%	%
Issues Rated		
Taxes and government spending	49	35
Drugs	49	34
Crime	43	30
Pollution control	43	-
Controlling inflation	36	35
Education	32	38
State of the economy	25	33
Racial relations	14	30
Student unrest	4	24

Today we would expect different answers to this question. Inflation and other issues have become more prominent topics of conversation than just three months ago, but we would not expect the concern about the environment to have diminished during that time.

One may wonder whether pollution control was particularly associated with other issues. Table IV-1 shows for each issue the percentage of people who also chose pollution control. For example, 49 percent of the people chose taxes and government spending as one of the three main issues; about one third of them (35%) also chose pollution control.

Pollution control was selected along with the other issues 25 to 38 percent of the time as shown in Table IV-1. In other words, it was not very strongly associated with any particular issue.

Prominence of Pollution Control and Concern About Environmental Damage

To further probe to what extent pollution control may have been displaced by other issues we can view its prominence against the concern measure introduced in Chapter III. Table IV-2 shows, for each level of concern about environmental damage, the deviations from average in the frequency with which pollution control and the other eight issues were chosen as one of the three most important at the time of the survey.

The frequency with which pollution control was chosen as one of the three most important issues is 13 percentage points above average among people who have a high level of concern about environmental damage.

In other words, 56 percent of the people highly concerned about environmental damage chose pollution control as one of the most important issues of the day. People with a medium concern level do not differ from the average. Those with a low level of concern are 10 points below average, that is to say that only 33 percent chose pollution control as one of the most important issues of the day.

What about the other issues? If one or more are above average, others have to be below average, for people had a fixed number of issues to choose from. We find the differences for other issues to be small; again, this confirms that pollution is not particularly associated with any other issue.

TABLE IV-2

PROMINENCE OF POLLUTION CONTROL
AND CONCERN ABOUT ENVIRONMENTAL DAMAGE

	Total Sample Average	Deviations from Average by Level of Environmental Damage Concern		
		High	Medium	Low
BASE	(3038)	(710)	(1337)	(990)
	%	%	%	%
Issues Rated				
Pollution control	43	+13	0	-10
Taxes and government spending	49	- 1	- 3	+ 5
Drugs	49	- 3	0	+ 2
Crime	43	- 2	+ 1	0
Controlling inflation	36	- 6	- 1	+ 5
Education	32	0	0	0
State of the economy	25	- 2	+ 1	0
Racial relations	14	+ 2	+ 1	- 3
Student unrest	4	0	0	0

Demographic Differences in Prominence of Pollution Control

The prominence of pollution control was higher among the young, the college educated, the actively employed and those residing in metropolitan areas than it was among their counterparts. But it was not by any means limited to these groups.

TABLE IV-3

DEMOGRAPHIC DIFFERENCES IN SELECTION OF POLLUTION CONTROL AS ONE OF MOST IMPORTANT ISSUES

	%
Total Sample	43
Age:	
18 - 34	51
35 and over	38
Education:	
College	48
No college	40
Occupation of Household Head:	
White collar	48
Blue collar, farm	42
Not employed	38
Household Income:	
Under $3,000	42
$3,000 - $6,999	40
$7,000 - $14,999	44
$15,000 and over	45
Area Type and Size:	
Metropolitan, 1MM and over	45
Metropolitan, 50M - 1MM	46
Non-metropolitan	36

We will now turn to the other measure included in this chapter, namely the feelings about progress made in the fight against pollution. After discussing the key findings we will compare it with the prominence of pollution control.

Questions Concerning Feelings About the Fight Against Pollution

Four questions were subsequently asked concerning feelings about the fight against pollution. Here are the questions:

- Here's a card with feelings people have expressed about the fight against air pollution. Would you read it please and tell me which one statement comes closest to expressing how you feel? Just give me the number in front of the one you choose.
- How about water pollution? Which one statement comes closest to expressing how you feel?
- Which one statement comes closest to expressing how you feel about controlling the use of hazardous chemical pesticides and finding safer ones?
- Which one statement comes closest to expressing how you feel about the effort to find better and more sanitary ways of disposing of garbage, trash and other solid wastes?

The following list of statements was handed to the respondent when asking the first of these four questions:

1. The problem is too big and it will never be solved, no matter how hard we try.
2. It is a big problem and it is not being solved because we are not trying hard enough.
3. It is a big problem but we are beginning to solve it.
4. It is a big problem but we are making a lot of progress in solving it.

5. It is hard to say whether it is a big problem or not and whether we are making progress in solving it or not.
6. It is not a big problem and we are making a lot of progress in solving it.
7. It is not a big problem and it is pretty well solved already.
8. It is not a big problem and we are putting too much effort into solving it.
9. It is not a problem at all and there is no need to do anything about it.

These nine statements provide a broad range of options ranging from opposite extremes to a middle ground position for those who have not formed an opinion and experience no particular feelings about the issue. On either side, the statements provide opportunities to express various levels of optimism or pessimism based on the premise that the problem is big or that it is small.

Feelings About Progress Made in the Fight Against Pollution

Feelings about progress made were measured concerning the fight against air pollution and against water pollution, control of hazardous pesticides and the management of solid waste.

Few people think these are not big problems. The most frequent answers are either that the problem is big and is not being solved because we are not trying hard enough or that the problem is big and we are beginning to solve it. Forty-six to 65 percent of the people gave one of these two answers depending on the issue.

TABLE IV-4

FEELINGS ABOUT PROGRESS MADE IN THE FIGHT AGAINST POLLUTION

	Air Pollution	Water Pollution	Pesti-cides	Solid Waste
	%	%	%	%
It is a big problem and...				
...will never be solved	6	5	3	4
...we are not trying hard enough	29	29	19	23
...we are beginning to solve it	36	34	27	30
...we are making a lot of progress	13	15	15	18
It is hard to say how big it is and how much progress is being made	12	11	22	13
It is not a big problem and...				
...we are making a lot of progress	2	3	7	6
...it is pretty well solved	-	2	4	4
...we are putting in too much effort	1	1	3	2
...there is no need to do anything	1	1	1	1

NOTE: The phrases used are greatly abbreviated here. A full description is given on page 40.

Taking the four issues together, more people lean toward optimism than pessimism. The feeling that we are beginning to solve these problems or are making a lot of progress is held by more people than the feeling that these problems are not being solved.

Does the Prominence of an Issue Measure Its Importance?

Having examined the feelings expressed about progress made in the fight against pollution, we now turn to the question raised earlier, namely whether a question about the most important issues of the day is a reliable guide to the importance people attach to pollution control.

The information gathered through the two questions discussed in this chapter is shown in Table IV-5. In that table, feelings about the fight against air pollution expressd by people who chose air and water pollution control as one of the three most important issues are compared with feelings expressed by people who did not choose pollution control as one of the three most important issues. The differences between the two groups, shown in the third column, are small except at two points along the feelings scale.

TABLE IV-5

IMPORTANCE OF POLLUTION CONTROL AND FEELINGS ABOUT PROGRESS MADE AGAINST POLLUTION

BASE	Most Important Issue (1302)	Not Most Important Issue (1736)	Difference
	%	%	% pts
Control of air pollution is a big problem and...			
...will never be solved	5	8	- 3
...we are not trying hard enough	37	23	+14
...we are beginning to solve it	37	34	+ 3
...we are making a lot of progress	11	14	- 3
It is hard to say how big it is and how much progress is being made	7	15	- 8
It is a big problem and...			
...we are making a lot of progress	2	2	0
...it is pretty well solved	1	1	0
...we are putting in too much effort	-	2	- 2
...there is no need to do anything	-	1	- 1

The incidence of people who have not formed an opinion about progress made is eight percentage points higher among those who did not name pollution control as one of the most important issues. The incidence of people who feel that we are not trying hard enough to solve air pollution problems is 14 percentage points higher among those who named pollution control as one of the most important issues.

In spite of these differences, there remain 23 percent who feel we are not trying hard enough and 34 percent who feel we are beginning to solve the problem and did not name pollution control as one of the most important issues. In other words, the failure to name pollution control as one of three most important issues cannot be interpreted as a lack of concern or as implying that pollution is not a big problem nor as an indication that we should not try to do something about it.

It is clear that when we ask people to name the three most important issues of the day, we give them a comparatively crude device to express their opinions; we may measure the prominence of issues but not necessarily their importance.

Questions About Personal Involvement

The question about what people have done to improve the environment was asked as follows:

- During these last twelve months, have you had an opportunity to do anything for the purpose of improving the quality of your environment? [If the answer was yes] What did you do?

What People Do to Improve Their Environment

The majority, 58 percent to be exact, say that they have not done anything. Those who say they have done something mention property improvements (19%), recycling (5%), cleaning up public areas (5%) and a variety of other activities listed in Table IV-6.

TABLE IV-6

WHAT PEOPLE DO TO IMPROVE THE ENVIRONMENT

	Total Sample %
Did nothing	58
Did something	40
Home and job directed	22
Property improvements	19
Job related contribution	2
Pollution directed	28
Solid waste related:	
Cleaning public areas	5
Recycling	5
Proper trash disposal	3
Not litter	2
Automobile related:	
Cut down on use of car	2
Improved car operation	3
Organizational activities	4
All other pollution related	4
All other not pollution related	4

NOTE: The sum of item frequencies exceeds 40 because of multiple answers.

Differences in Personal Involvement

We will now relate the activities reported by people to their views on the prominence of pollution control, their rating of the environment and their level of concern about environmental damage. For that purpose we will summarize the percentages rather than use the full list because of its length and the low frequency of most activities.

TABLE IV-7

WHAT PEOPLE DO TO IMPROVE THE ENVIRONMENT -- FREQUENCIES BY PROMINENCE OF ISSUE, RATING OF ENVIRONMENT AND CONCERN ABOUT DAMAGE

	Pollution Control Is:		Rating of Environment			Concern About Environmental Damage		
	One of Most Important Issues	Not One of Most Important	Excel. Very Good	Good	Fair, Poor, Very Poor	High	Medium	Low
BASE	(1302)	(1736)	(914)	(1032)	(1039)	(710)	(1337)	(990)
	%	%	%	%	%	%	%	%
Home and job directed	20	22	25	22	19	21	22	21
Property improvements	18	20	22	20	17	19	20	19
Job related	2	2	3	2	2	2	2	2
Pollution directed	36	21	30	25	30	42	30	16
Solid waste related	19	12	18	14	15	23	16	10
Automobile related	6	3	4	4	5	7	5	2
Organizational	5	4	4	3	6	6	5	2
Other	6	2	4	4	4	6	4	2

The frequency of home and job related activities does not vary with the person's view on the prominence of pollution control nor his level of concern about environmental damage. It does increase somewhat with the rating of the environment and most of the increase is in property improvements. The detailed tabulations show that increase to be strongly related to household income. Home and job directed activities reported as designed to improve the environment are clearly not a good measure of personal involvement in environmental issues.

The frequency of pollution directed activities does not vary with a person's rating of the environment; it does vary with his view on the prominence of pollution control and particularly with his degree of concern about environmental damage.

In a later chapter we will discuss a measure of willingness to pay for a better environment. It should be pointed out here that the frequency of pollution related activities also increases with willingness to pay. The data is shown in Volume II.

We conclude that the pollution related activities reported by people as designed to improve the environment do reflect personal involvement in the fight against pollution. In fact, the 28 percent level (Table IV-6) of participation in these activities is quite impressive, probably quite a bit higher than participation in political campaigns, for example.

Questions About Priorities in Environmental Protection

All environmental problems cannot be solved immediately and it is unlikely that sufficient resources will be allocated to solving all the problems in a short time. Consequently, questions about priorities must be framed in the context of limited resources.

Respondents to this survey were asked to allocate a constant sum to nine items representing various ways of attacking pollution. After asking the question, the interviewer handed the list of items and a pencil to the respondent who filled in the answers. The question was stated as follows:

- Now I'm going to give you a list of things that could be done with the money people are willing to pay to improve the environment. The question is this: for every 100 dollars collected, how many dollars should be spent on each of the things listed here? You can answer this by yourself. Give as many or as few dollars as you wish to each item listed. It is NOT necessary to give something to each item. You must make sure the total adds up to $100.

The following list was handed to the respondent with spaces to be filled in:

Eliminating air pollution from plants and factories
Treating sewer wastes so that they don't pollute the water
Improving mass transportation
Making sure atomic plants are safe
Eliminating excessive noise
Disposing of trash and garbage in a sanitary fashion
Restoring lands affected by strip mining
Making car and truck engines that cause little or no air pollution
Finding safer pesticides to kill weeds, bugs, funguses, etc.

Desired Allocation of Expenditures to Improve the Environment

The percentage of dollars people allocated to each item represents their sense of spending priorities. If people felt all items to be equally important, they would have allocated 11 percent of the dollars to each one. As it turned out, the averages ranged from 17 percent for sewage treatment, and about the same for industrial air pollution control, to 5 percent for restoring lands affected by strip mining.

Table IV-8 summarizes the public's sense of spending priorities on environmental protection. For the sake of brevity, we will use the conventional terms rather than the phrases used in the questionnaire.

TABLE IV-8

DESIRED ALLOCATION OF EXPENDITURES

	Percent of Dollars %	Priority Rank
Sewage treatment	17	1
Industrial air pollution control	17	2
Solid waste management	14	3
Automotive emission control	13	4
Safer pesticide development	11	5
Mass transportation	10	6
Atomic power risk protection	7	7
Noise abatement	6	8
Strip-mined land restoration	5	9

The figures in Table IV-8 speak for themselves. With three exceptions the rank of each item does not change more than one place when priorities are examined by subgroups. These subgroups are shown in Volume II.

The three exceptions are pesticide development, mass transportation and solid waste management.

Safer pesticide development, which ranks fifth in the country as a whole, ranks sixth in metropolitan areas with one million people or more (9% of the dollars), fifth in metropolitan areas with fewer than one million people (11% of the dollars) and fourth in non-metropolitan areas (14% of the dollars).

Mass transportation, which ranks sixth in the country as a whole, ranks fifth in metropolitan areas with one million or more people (12% of the dollars), sixth in metropolitan areas with fewer than one million people (10% of the dollars) and seventh in non-metropolitan areas (6% of the dollars).

Solid waste management, which ranks third in the country as a whole, ranks fourth in metropolitan areas with more than one million people (12% of the dollars), third in metropolitan areas with fewer than one million people (14% of the dollars) and second in non-metropolitan areas (17% of the dollars).

Summary

The fight against pollution is likely to be a long one and will need continuing public support. In this chapter we have looked at three measures that, to a greater or lesser extent, reveal where people stand on this issue.

First we looked at a question of the type frequently used in polls; we asked people to choose the three most important issues of the day. Crime and pollution control tied for third place among a list of nine issues, following taxes and government spending (listed as one issue) and drugs. We also found that, compared to other measures, the prominence of pollution as an issue is a relatively poor measure of concern about environmental damage and of feelings about the fight against pollution.

Next we looked at feelings about the fight against air pollution, water pollution, hazardous pesticides and solid waste. Few people feel that these are not big problems; the majority say that they are big problems. In terms of solving the problems, more people lean toward optimism than pessimism.

The next question discussed in this chapter is the personal involvement in improving the environment. Although 58 percent say they have not done anything and 22 percent mention property improvements and job

74

related contributions that do not seem to reveal involvement in the issue, the 28 percent who have been involved in antipollution activities represent a substantial level of participation. Among people most concerned about environmental damage, the involvement level is 42 percent. The activities mentioned include recycling and other solid waste removal or disposal efforts, cutting down the use of the car or improving its operation and participating in environment oriented organizations.

The last question discussed in this chapter is the public's sense of priorities in environmental protection. Priorities were measured by the percentage of dollars assigned to each activity out of the total dollars to be dedicated to environmental protection. We found that sewage treatment, industrial air pollution control and solid waste management rank first, second and third among the nine. These are followed by automotive emission control, safer pesticide development and mass transportation. The three that rank lowest in priority are atomic power risk protection, noise abatement and the restoration of strip-mined lands.

V. AWARENESS OF AND KNOWLEDGE ABOUT EPA

The level of personal involvement in the fight against pollution discussed in the preceding chapter is impressive. Yet the will and determination of the people to win that fight must be nurtured by institutions that carry out what people cannot do by themselves individually. It would have been impractical in this study to try to capture opinions about the vast number of federal, state and local government agencies and profit and non-profit organizations that participate in environmental protection. Consequently we limited our inquiry to public awareness of government participation at the federal level. Questions about specific knowledge of accomplishments were limited to the Environmental Protection Agency.

The questions addressed here are how many people know about the existence of a federal agency directly involved in fighting pollution, what they know about the accomplishments of EPA and how their awareness of EPA relates to opinions and attitudes discussed in this study.

Questions Asked

The following questions were asked to gather the data discussed in this chapter:

- Do you know whether there is a Federal Agency or Department directly involved in fighting pollution and protecting the environment? [If yes] What is the name of that Agency or Department?
- Two years ago, Congress created the United States Environmental Protection Agency. Have you ever heard of the Agency before?

- How much would you say you know about the Environmental Protection Agency, a great deal, a fair amount, a little, almost nothing or nothing at all?
- Have you heard anything specific that the Environmental Protection Agency has accomplished? [If yes] What have you heard?

Of course, not everyone was asked all these questions. For example, if a respondent said he had never heard of EPA he was not asked how much he knew about it.

Awareness of EPA

When asked whether there is a Federal Agency or Department directly involved in fighting pollution and protecting the environment, 55 percent of the people say they do not know. The 45 percent who say "yes" break down as follows: 10 percent name EPA correctly, 9 percent give the name of other agencies and 26 percent say there is an agency directly involved in protecting the environment but do not know its name.

When asked whether they have heard of the U. S. Environmental Protection Agency, 58 percent say yes and 42 percent say no.

As we will see shortly, those who have heard of EPA have opinions and attitudes toward environmental issues that are different from those who have not heard of the Agency.

TABLE V-1

AWARENESS OF EPA

	Total Sample
	%
Unaided Awareness	
Heard of a Federal Agency involved in protecting the environment and...	
...Named EPA correctly	10
...Named other agencies	9
...Didn't know name	26
Have not heard of such Federal Agency	55
Aided Awareness	
Has respondent heard of EPA?	
Yes	58*
No	42

* Includes 10% who named EPA correctly unaided.

Familiarity with EPA

People who had heard of EPA were asked to rate their knowledge about the Agency. As Table V-2 shows, most people who have heard of EPA know little or nothing about it.

TABLE V-2

FAMILIARITY WITH EPA

BASE: Aware of EPA	Total Aware (1765)
	%
Familiarity Rating:	
Know a great deal	3
Know a fair amount	16
Know a little	41
Know almost nothing	30
Know nothing at all	10

Accomplishments Attributed to EPA

People who had heard of EPA were also asked what the Agency has accomplished. The accomplishments mentioned by the forty-six percent who had heard something specific are listed in Table V-3.

TABLE V-3

ACCOMPLISHMENTS ATTRIBUTED TO EPA

	Total Aware of EPA
	%
Air pollution (net total)	22
Auto emission standards	14
Industrial emission control	7
Other air pollution	4
Water pollution (net total)	18
Industrial effluent control	6
Cleaning streams, lakes, etc.	4
Oil spill related activities	4
Sewage treatment, control	2
Banning phosphates	1
Other water pollution	4
Other industrial pollution	7
Solid waste management	4
Land conservation	3
Pesticide control	2
Making people aware, education	2
Noise pollution related	2
Radiation related	1
Alaskan pipeline issue	1
Other positive comments	4
Negative comments	2
Don't know	2
Heard nothing specific	54

Demographic Differences

Awareness of EPA and its accomplishments increases with education, income and degree of urbanization. But it is higher among younger than older people. This is the same pattern observed with other dimensions included in the study. The figures are shown in Table V-4.

Opinion and Attitude Differences

People who are aware of EPA answered most questions differently from those who are not. Because the answers to many questions differ between income groups and awareness of EPA increases with income, the differences in opinions between those aware and those not aware of EPA shown in Volume II must be interpreted with due regard to those intercorrelations. The same problem exists with age, area size, education and occupation.

In the analysis of overall willingness to pay for a better environment discussed in Chapter VII, the net effect of EPA awareness has been measured using multivariate statistical analysis. As will be shown, even after adjustment for income, age and other variables, awareness of EPA has a strong effect on overall willingness to pay; the greater the awareness of EPA, the larger the amount people are willing to pay for a better environment. Thus, while the comparisons shown in this chapter do overstate differences between people aware and not aware, it can be confidently predicted that adjustments for income and other demographic factors would not wipe out most of the differences shown here.

TABLE V-4

DEMOGRAPHIC DIFFERENCES IN AWARENESS OF EPA AND ITS ACCOMPLISHMENTS

	Aware of EPA		Aware of
	Unaided	Aided	Accomplishments
	%	%	%
Total Sample	10	58	46
Age:			
18 - 34	13	66	48
35 and over	8	54	45
Education:			
College	20	77	56
No college	5	49	39
Occupation of Household Head:			
White collar	17	73	52
Blue collar, farm	7	55	44
Not employed	6	44	41
Income:			
Under $3,000	3	30	46
$3,000 - $6,999	4	46	38
$7,000 - $14,999	9	64	45
$15,000 and over	18	76	55
Area Type and Size:			
Metropolitan, 1MM and over	11	63	46
Metropolitan, 50M - 1MM	10	59	50
Non-metropolitan	7	49	43

EPA Awareness and the Fight Against Pollution

In Chapter IV we discussed personal involvement in the fight against pollution and feelings of optimism and pessimism about progress being made. In this section we will relate these two measures to awareness of EPA.

The relationship with personal involvement is shown in Table V-5. The types of action taken are identified by the two major descriptive labels applied earlier, namely home and job related action and pollution directed action which includes clean-up campaigns, organizational activities, recycling, use of low-phosphate detergents, etc.

TABLE V-5

EPA AWARENESS AND PERSONAL INVOLVEMENT IN IMPROVING THE ENVIRONMENT

BASE	Total Sample (3038)	Aware of EPA (1768)	Not Aware of EPA (1270)
	%	%	%
Action Taken			
Home and job directed	22	23	20
Pollution directed	28	39	13

As pointed out in Chapter IV, home and job directed actions are not a measure of involvement; pollution directed actions are a good measure. Table V-5 shows that people who are aware of EPA are more involved in the fight against pollution than those who are not aware of EPA; the incidence of action taken against pollution is 39 percent among the aware and 13 percent among the not aware, a three-to-one ratio.

Turning to the relationship between awareness of EPA and feelings about the progress made in the fight against pollution, we find interesting differences between issues. The figures are in TableV-6.

The percentages of people who say "it is hard to decide" are highest when it comes to controlling the use of hazardous chemical pesticides and finding safer ones. Twenty percent of those aware of EPA and 24 percent of those not aware have come to no conclusion on this issue. In fact, the differences between aware and not aware are small along all points of the scale when it comes to pesticides. It is apparent that this is an issue people have difficulty resolving in their minds.

Concerning the other three issues, namely air pollution, water pollution and solid waste, it is apparent that people aware of EPA are more likely to have made their minds up and to feel more optimistic about the progress being made.

TABLE V-6

AWARENESS OF EPA AND FEELINGS ABOUT PROGRESS MADE IN THE FIGHT AGAINST POLLUTION

	Air Pollution		Water Pollution		Pesticides		Solid Waste	
	Aware	Not Aware	Aware	Not Aware	Aware	Not Aware	Aware	Not Aware
	%	%	%	%	%	%	%	%
It is a big problem and...								
...it will never be solved	4	10	3	7	2	4	2	6
...we are not trying hard enough	31	27	32	25	22	16	24	21
...we are beginning to solve it	39	30	36	32	27	26	32	26
...we are making a lot of progress	13	13	16	13	15	14	19	16
It is hard to say how big it is and how much progress is being made	9	15	8	16	20	24	11	16
It is not a big problem and...								
...we are making a lot of progress	2	3	2	4	7	6	6	5
...it is pretty well solved	-	-	1	2	4	4	4	5
...we are putting in too much effort	1	1	1	1	2	3	1	2
.. there is no need to do anything	-	1	-	1	1	2	-	2

NOTE: The phrases used are greatly abbreviated here. A full description is given on page 40.

We do not mean to imply that awareness of EPA changes people's attitudes; we do not know whether it does or not. We showed earlier in this chapter that awareness of EPA is often accompanied by awareness of specific environmental protection activities. It seems reasonable to assume that public support for environmental protection will be contingent on the perception of what is being accomplished and on public confidence in those who legislate, implement and enforce protection measures. It follows that a flow of accurate and reliable information to the public is necessary for their continued support.

Summary

This survey included four questions designed to learn how many people know about the U. S. Environmental Protection Agency and what they perceive its accomplishments to be.

Many people don't even know whether there is a Federal Agency involved in protecting the environment. Only 10 percent of the people can name EPA without help. When the name is mentioned, another 48 percent say yes, they have heard of EPA. Thus a total of 58 percent are aware of EPA.

Of the people who are aware of EPA, 40 percent say they know almost nothing or nothing at all about the Agency. Another 41 percent say they know a little. The remaining 19 percent say they know a fair amount or a great deal.

Concerning the perception of EPA accomplishments, air pollution standards and control head the list with a frequency of 22 percent of people aware of EPA, followed by water pollution control with a frequency of 18 percent. The frequency of negative comments is extremely low at 2 percent. Fifty-four percent have heard nothing specific.

People aware of EPA are more involved in the fight against pollution than people not aware of EPA. Among those aware, 39 percent report some meaningful activity directed against pollution, including recycling, clean up of public areas, resource conservation and others. Among those not aware, the frequency is 13 percent, only one-third as much.

When it comes to feelings about progress in fighting pollution, EPA awareness makes little difference with respect to pesticides, an issue many people are undecided about. Awareness of EPA does make a difference with respect to air and water pollution and solid waste management. Generally, people aware of EPA are more likely to have made their minds up about these issues and to be more optimistic about the progress being made.

VI. WILLINGNESS TO PAY FOR SPECIFIC PROGRAMS TO IMPROVE THE ENVIRONMENT

In the preceding chapters we have discussed people's perception of the environment, their quality ratings, their concern about alleged sources of damage to the environment, their feelings about the fight against pollution, their sense of priorities and their awareness of EPA. Each one of these measures of public opinion and attitudes has revealed widespread concern about the environment.

Two major questions remain to be answered: Will people pay for a better environment? What degree of enforcement will they support?

People's willingness to pay for a better environment is examined in Chapters VI and VII. Their attitudes towards enforcement are examined in Chapter VIII.

In order to explore their willingness to pay the cost of environmental protection, people were asked four series of questions: how much they are willing to pay for specific programs, how they feel about hypothetical costs which may go beyond the range of what most people expect to pay, how they feel about a factory closing and how much they are willing to pay overall. This chapter includes all but the last of these questions.

The specific "programs" we asked about are: reduction of air pollution in power generation, reduction of water pollution in food production and processing, recycling solid waste, sewage treatment and reduction of automobile emissions.

These questions give concrete form to environmental protection and translate its cost into price or tax increases so that people can respond in a meaningful context. Nevertheless, these questions are projective, for they ask people to say what they would do rather than what they do now. The dollar amounts thus obtained cannot be taken as the upper limit of what people are willing to pay. They must be seen as the amount people volunteer in the absence of definite information. It is well known that once people are confronted with an accomplished fact there is a significant shift in opinion. For this reason, we also asked people to react to what is now an impending event, namely the implementation of mandatory emission control standards for automobiles; we tested their reactions to $150, $300 and $500 hypothetical increases in new car prices. Thus we can relate the amount people volunteered to pay to their reaction to set price increases which, as we will show, exceed the amount most people volunteered.

Another type of cost is the displacement and uncertainty represented by the closing of marginal industrial plants when faced with stricter pollution standards and their enforcement. This issue was also probed in terms of reactions to an accomplished fact.

Finally, a question about the preference between higher prices and higher taxes completes this chapter.

Summary of Averages Obtained

It should be noted that in four of these open-end questions an "anchor" or reference point was given to or provided by the respondent. In the case of additional electric and sewer costs, the respondent provided current amounts paid. In the case of solid waste management, respondents were told that the average family now spends $80 per year in solid waste disposal. In the case of food processing, respondents were told that to clean up that form of pollution may raise the cost of food items as much as $30 per year for the average family. The "anchors" are listed in Table VI-1 under the heading "base amount".

TABLE VI-1

AVERAGE AMOUNTS PEOPLE ARE WILLING TO PAY
FOR SPECIFIC PROGRAMS

Willingness to Pay Measure	Base Amount	Additional Amount Willing to Pay: Average Amount	Additional Amount Willing to Pay: Percent Increase
Antipollution devices in new cars	not used	$62.47	N.A.
Automobile operating costs (annual)	not used	$26.70	N.A.
Electric bill (monthly)	$17.42	$ 3.84	22%
Recycling solid waste (annual)	$80.00	$12.22	15%
Sewage treatment (annual)	$42.81	$ 8.80	21%
Food processing (annual)	$30.00	$ 7.43	N.A.

Table VI-1 shows the average amounts volunteered in dollars and as a percentage increase over the base amounts when applicable. For the sake of brevity and simplicity, we will use dollar averages in the discussion, but the reader should keep in mind that the ranges of dollar figures given by people are very wide. Frequency distributions of dollar amounts are included in Volume II with other tabular data.

Willingness to Pay for Automobile Emmission Control

When we wrote the questionnaire for this survey, the timetable of mandatory standards for automotive emission controls was uncertain and the cost of those standards to automobile owners was even more uncertain. The questions asked were phrased accordingly but recognizing that there is a statutory mandate to meet air quality standards.

The data used here are based on respondents who live in car-owning households; we refer to them simply as car owners regardless of who holds title to the household car or cars.

Questions asked. Three open-end questions were asked about the willingness to pay for auto emission controls and the reaction to hypothetical price increases:

- As you may know, automobiles are one of the major sources of air pollution. Would you be willing to pay a higher price for a car and higher operating costs if it helps clean the air? [If the answer was "no", it was coded zero on the next two questions.]

- With respect to purchasing a car, how much extra would you be willing to pay to have the antipollution devices added?
- How much extra would you be willing to pay in annual operating costs for extra gas and maintenance?

Amounts volunteered. As shown in Table VI-1, the averages of all responses are $62 for antipollution devices in a new car and $27 for additional annual operating costs. As we will see shortly, many people will pay more for a new car if asked to do so. First we will look at two factors that explain differences in the amounts people volunteer.

Table VI-2 shows the average amounts volunteered for additional operating costs at different income levels. It shows these averages for all car owners and also by their concern about automobile exhaust damage to the environment. The upper half of the table shows dollar averages; the lower half shows these averages as percentages above or below the sample average. For example, the average amount volunteered by all car owners is $27 per year; the average volunteered by those in households with incomes of $15,000 or more who rate auto exhaust damage "a lot" or "some" is $44, an amount 63 percent above that average.

The effect of income is striking; the higher the income, the greater the amount volunteered to pay for additional automobile operating costs to help clean the air. Even if the lowest income bracket is excluded, we find that people with household incomes in the $3,000 to $6,999 range volunteer $18 per year, an amount 33 percent below the overall average; people with household incomes of $15,000 or more volunteer to pay $42, an amount 56 percent above the average for all car owners. Between these two groups, we find that people with incomes close to average volunteer an average amount.

The effect of concern about automobile exhaust damage is also evident but considerably smaller than the effect of income. Car owners who are concerned about exhaust damage, the ones who say exhaust does "a lot" or "some" damage, volunteer to pay $30, that is an amount 11 percent above average, those not concerned about exhaust damage volunteer $19. an amount 30 percent below average.

This effect is observable at every income level. Conversely, the income effect operates among car owners concerned about damage and those not concerned about it.

TABLE VI-2

AMOUNT WILLING TO PAY ANNUALLY IN ADDITIONAL AUTOMOBILE OPERATING COSTS TO HELP CLEAN THE AIR

	Total Car Owners	Household Income			
		Under $3,000	$3,000-$6,999	$7,000-$14,999	$15,000 & Over
Amount Willing to Pay					
Total car owners	$27	$10	$18	$27	$42
Rate auto exhaust damage "a lot" or "some"	$30	$12	$18	$31	$44
Rate auto exhaust damage "a little" or "none"	$19	$ 6	$17	$18	$35
% Above or Below Average					
Total car owners		-63%	-33%	0%	+56%
Rate auto exhaust damage "a lot" or "some"	+11%	-56%	-33%	+15%	+63%
Rate auto exhaust damage "a little" or "none"	-30%	-78%	-37%	-33%	+30%

Turning to the amount volunteered to pay for antipollution devices in new cars, shown in Table VI-3, we find a considerably smaller income effect and a slightly larger effect of concern about car exhaust. In spite of this, the income effect is the stronger of the two.

Car owners in the $15,000 and over income bracket volunteer to pay $80 per car or 29 percent more than the $62 average for all car owners; those in the $3,000 to $6,999 income bracket volunteer to pay $48, an amount 23 percent below the average.

Car owners concerned about exhaust damage volunteer to pay $71, an amount 14 percent above average; those not concerned volunteer to pay $43, an amount 31 percent below average. Clearly, the amount volunteered rises faster with income than with concern about automobile exhaust damage.

As mentioned earlier, these amounts do not represent the maximum people are willing to pay. To explore this issue, we will look at another question asked about new-car prices.

TABLE VI-3

AMOUNT WILLING TO PAY FOR ANTIPOLLUTION DEVICES IN A NEW AUTOMOBILE

	Total Car Owners	Household Income			
		Under $3,000	$3,000-$6,999	$7,000-$14,999	$15,000 & Over
Amount Willing to Pay					
Total car owners	$62	$33	$48	$67	$80
Rate auto exhaust damage "a lot" or "some"	$71	$41	$50	$75	$86
Rate auto exhaust damage "a little" or "none"	$43	$19	$45	$46	$60
% Above or Below Average					
Total car owners		-47%	-23%	+ 8%	+29%
Rate auto exhaust damage "a lot" or "some"	+14%	-34%	-19%	+21%	+39%
Rate auto exhaust damage "a little" or "none"	-31%	-69%	-27%	-26%	- 3%

Feelings About Hypothetical New Car Price Increases

We now turn to the reactions of people to an "accomplished fact", namely the need to pay higher prices for new cars within a few years. We will look at these reactions in relation to the amounts volunteered first, and in relation to the concern about pollution from automobile emissions.

Questions asked. Respondents were asked to read the following statement:

> "Because air pollution is considered a health hazard, within two or three years all new cars will be required by law to come equipped with new devices to eliminate most of the fumes that now cause air pollution from automobiles. This additional equipment, which is not yet perfected, together with some changes in the engine, will not only cost money but will probably cut down on the car's performance such as power and acceleration. Many cars will also use more gas per mile."

When the respondent finished reading the statement, the interviewer continued as follows:

> This card has five kinds of answers people give when they learn that the new models beginning with 1975 or 1976 will cost more money.

The card handed to the respondent had the following statements:

A. It's a good thing; I'll be delighted to pay the extra money to fight air pollution.

B. It's O.K. with me; it's only fair that if we drive cars we pay money to fight air pollution.

C. It's hard to say. I'm not too concerned about the price of cars.

D. It's a bad thing; it's unfair to force everybody who buys a car to pay that much to fight pollution.

E. It's a terrible thing; I resent very much having to pay that much to fight pollution.

The three questions followed in sequence:

- Suppose that these new antipollution devices made the price of every new car go up $150, which statement on this card comes closest to saying how you would feel?
- Suppose that these new antipollution devices made the price of every new car go up $300, which statement on this card comes closest to saying how you would feel?
- Suppose that these new antipollution devices made the price of every new car go up $500, which statement on this card comes closest to saying how you would feel?

Feelings expressed. It is not surprising that the higher the price the greater the frequency of negative reactions. At $150, 53 percent give a positive response. At $500 only 15 percent give a positive response. The difference, 38 percentage points, is nearly equal to the increase in negative responses. The figures are shown in Table VI-4.

At $150 the positive responses outnumber the negative responses nearly 2 to 1 (53% vs. 29%). At $300 the ratio is reversed and negative reponses outnumber the positive ones nearly 2 to 1 and at $500 the ratio is nearly 5 to 1.

TABLE VI-4

FEELINGS ABOUT NEW CAR PRICE INCREASES BECAUSE OF ANTIPOLLUTION DEVICES

(Base: Respondents in car-owning households)

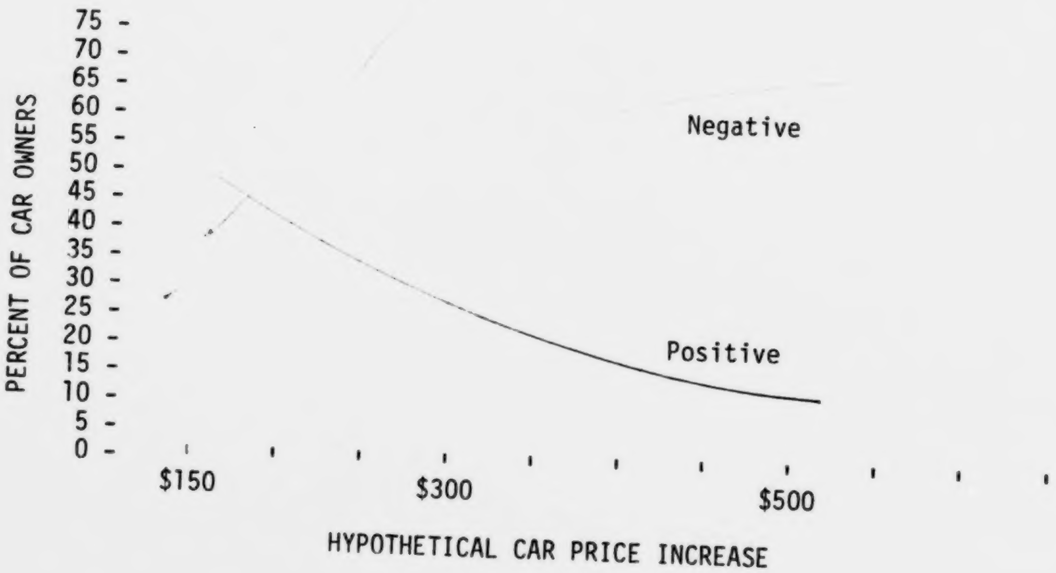
	Hypothetical Price Increase		
	$150	$300	$500
	%	%	%
Positive	53	28	15
It's a good thing; I'll be delighted to pay..	19	7	4
It's O.K. with me; it's only fair...	34	21	11
Neutral			
It's hard to say; I'm not too concerned...	18	19	16
Negative	29	54	69
It's a bad thing; it's unfair...	15	23	19
It's a terrible thing; I resent very much...	9	23	40
None of these*	5	8	10

* Usually one of the following: "wouldn't buy new car" or "manufacturer should absorb it". Hence they are included in the negative response totals.

A straight-line interpolation, as done in Chart VI-1, shows that the frequencies of positive and negative feelings would be about equal at a price increase of $200. Thus, it could be argued that $200 is a reasonable ceiling for the price of emission controls, but neutral car owners are more likely to become positive than negative. Another estimate of the ceiling is $250, for at this level the frequency of negative reaction is still below 50 percent of car owners. In practice, much will depend on other factors not included in this survey such as the impact of inflation on real purchasing power and the level of consumer preference for smaller, lower priced cars.

CHART VI-1

POSITIVE AND NEGATIVE FEELINGS ABOUT NEW CAR PRICE INCREASES BECAUSE OF ANTIPOLLUTION DEVICES



Feelings about price increases related to amounts volunteered. When not told how many dollars antipollution devices might add to the price of a new car, people volunteered to pay an average of $62. When discussing that finding, we mentioned that there was a great deal of variation around that average. We will now group car owners into the following brackets according to the amount they volunteered to pay: $0, $1 to $50, $51 to $100, and $101 or more. We will also show the frequencies of feelings expressed by car owners in each of these brackets when told they might have to pay $150, $300 or even $500. In this manner, we will see whether or not their reactions vary according to the amount originally volunteered. This comparison is shown in Table VI-5. In this table, instead of using the five levels of the feelings scale we are using only the three class summary: positive, neutral and negative, for it is simpler and equally informative.

Previous research would lead us to expect, as mentioned earlier, that presenting people with an accomplished fact would cause a significant shift in opinion. This is, indeed, what happened.

To begin with, the sizeable group who did not volunteer to pay anything (49 percent) reacts as follows to a $150 price increase: 28 percent positive, 23 percent neutral and 49 percent negative. But the frequency of positive reactions in this group shrinks fast as hypothetical price increases go to $300 and $500. At $500 only 6 percent remain positive.

TABLE VI-5

FEELINGS ABOUT NEW CAR PRICE INCREASES RELATED TO WILLINGNESS TO PAY FOR ANTIPOLLUTION DEVICES

	Total	Amount Willing to Pay*			
Percent of Car Owners	Car Owners (100%)	Nothing (49%)	$1 - $50 (16%)	$51 - $100 (13%)	$101 or More (14%)
BASE	(2699)	(1329)	(422)	(359)	(377)
	%	%	%	%	&
Feelings About $150 Increase					
Positive	52	28	64	77	90
Neutral	18	23	15	15	6
Negative	30	49	21	8	4
Feelings About $300 Increase					
Positive	27	10	28	39	70
Neutral	19	19	21	21	12
Negative	54	71	51	40	18
Feelings About $500 Increase					
Positive	15	6	11	18	43
Neutral	16	15	15	14	19
Negative	69	79	74	68	38

* Amount volunteered by respondent before hypothetical increases of $150, $300 and $500 were mentioned. "No" answers are not shown but are included in the total column.

At the other end of the distribution, car owners who volunteered to pay $101 or more (14 percent of the total) react to a $150 increase as follows: 90 percent positive, 6 percent neutral and 4 percent negative. As many as 43 percent remain positive about a $500 price increase.

Table VI-5 shows two clear patterns. First, the frequency of positive response to any of the three price increases tested here rises dramatically with the amount the respondent volunteered to pay before specific price increases were mentioned. Second, within groups of car owners who volunteered to pay similar amounts, the frequency of positive response to the three price increases declines as the price increase goes up.

We conclude that the amount people volunteered to pay is a good relative measure of their attitude toward the cost of emission control but does not measure the absolute amount they are in fact willing to pay when confronted with presumably realistic estimates of actual costs. When the cost becomes an accomplished fact, simulated here with the statement that 1975 or 1976 cars will cost more money, opinions shift toward greater acceptance of the price increase. As of this time, increases of more than $250 would bring negative reactions from a majority of car owners.

Feelings about price increases related to exhaust damage ratings. In the preceding pages we have shown the positive, neutral and negative reactions to hypothetical price increases of $150, $300 and $500. We found that the amount volunteered to pay, before these hypothetical increases were mentioned to him, provide a good indication of the car owner's willingness to pay. We will now look at the effect of concern about automobile exhaust damage and the effect of the amount volunteered; comparing the two effects we will see which one is stronger. For the sake of brevity, we will do this at the $150 level only and we will compare the incidence of positive feelings only.

Table VI-6 shows the percentage of positive reactions to a $150 increase by the amount volunteered to pay and by the level of concern about automobile exhaust. Differences between each percentage and the sample average (52%) are shown in the lower portion of the table.

It is readily apparent that the amount volunteered to pay has a stronger effect on the level of positive reactions to a $150 price increase than concern about exhaust damage does. Among car owners who are concerned about exhaust damage, the frequency of positive reactions is 6 percentage points above average; among those not concerned, that frequency is 12 percentage points below average.

Among car owners who volunteered to pay nothing for exhaust control devices, the frequency of positive response to the $150 price increase

TABLE VI-6

FEELINGS ABOUT NEW CAR PRICE INCREASE OF $150 RELATED TO WILLINGNESS TO PAY FOR ANTIPOLLUTION DEVICES AND TO RATING OF AUTOMOBILE EXHAUST DAMAGE

	Total Car Owners	Amount Willing to Pay*			
		Nothing	$1 - $50	$51 - $100	$101 or More
Percent of Car Owners	(100%)	(49%)	(16%)	(13%)	(14%)
BASE	(2699)	(1329)	(422)	(359)	(377)
	%	%	%	%	%
Positive Response to $150 Increase					
Total car owners	52	28	64	77	90
Rate auto exhaust damage "a lot" or "some"	58	32	67	79	90
Rate auto exhaust damage "a little" or "none"	40	21	57	70	88
% Points Above or Below Average					
Total car owners		-24%	+12%	+25%	+38%
Rate auto exhaust damage "a lot" or "some"	+ 6%	-20%	+15%	+27%	+38%
Rate auto exhaust damage "a little" or "none"	-12%	-31%	+ 5%	+18%	+36%

* Amount volunteered by respondent before hypothetical increases of $150, $300 and $500 were mentioned. "No" answers are not shown but are included in the total column.

is 24 percentage points below average; among those who volunteered to pay $101 or more, the frequency of positive response is 38 percentage points above average. Clearly this is a stronger effect that that of concern about exhaust damage alone or income alone. A measure of these associations is discussed in the next section.

Correlation Ratios

Earlier in this chapter, when examining the findings shown in Table VI-2, we found that income has a greater impact on the amount people volunteer to pay than concern about exhaust does. Later on, when discussing the findings presented in Table VI-5, we pointed out that feelings about hypothetical price increases are rather closely related to the amounts people volunteered to pay. We now find that concern about exhaust has little impact on the acceptance of price increases among car owners who volunteered to pay large increases. It follows that willingness to pay for auto emission control is a function of both income and concern about car exhaust pollution but more dependent on income than on concern about car pollution. If we take these variables one at a time, the correlation ratios confirm this. In fact, the higher the hypothetical price increase, the stronger its association with income. The same is not true of concern about exhaust damage.

The correlation ratios between the measures of willingness to pay extra for a new car with antipollution devices, exhaust damage rating and household income are shown in Table VI-7.

TABLE VI-7

CORRELATION RATIOS BETWEEN WILLINGNESS
TO PAY FOR ANTIPOLLUTION DEVICES, CONCERN
ABOUT EXHAUST DAMAGE AND INCOME

	Independent Variable		
	Exhaust Damage Rating	Household Income	Amount Volunteered
	Eta*	Eta*	Eta*
Dependent Variable			
Additional amount willing to pay for a new car	.118	.283	1.000
Feelings about $150 increase	.173	.184	.393
Feelings about $300 increase	.161	.217	.434
Feelings about $500 increase	.173	.249	.428

* Pearson's correlation ratio (Eta) is better suited than Pearson's r to categorical variables used in public opinion surveys. It has the added advantage of not requiring linearity assumptions. The two measures are similar but Eta never has negative values even if the relationship is inverse.

Household income is more strongly associated with the amount volunteered to pay for antipollution devices in new cars than concern about automobile exhaust is. The association between feelings about price increases and exhaust damage remains fairly constant at the three price levels; the association between feelings and household income is stronger at each successive price level.

In closing this section, we will summarize the association between income and willingness to pay for motor vehicle emission control, as shown in Table VI-8.

TABLE VI-8
INCOME AND WILLINGNESS TO PAY FOR
OPERATING COSTS AND ANTIPOLLUTION DEVICES IN NEW CARS

Household Income	Percent of Households	Operating Costs (Average)	Willingness to Pay: Car Price Increase (Average)	Willingness to Pay: Positive Reaction to $150 Price Increase
$	%	$	$	%
Under $3,000	11	10	33	38
$3,000 - $6,999	19	18	48	44
$7,000 - $14,999	38	27	67	54
$15,000 & over	21	42	80	60

It is well known that the number of cars in the household increases with income, yet it should not be assumed that the greater the number of cars in the household the greater the amount people are willing to pay per car for antipollution devices. Actually the effect of number of cars is ambiguous: the amount volunteered tends to decline as the number of cars increases; the incidence of positive reactions to hypothetical price increases tends to rise as the number of cars increases. (See tables in Volume II.) This is consisitent with the finding that the amounts volunteered are not the limit of willingness to pay. It can be concluded that the reactions of multi-car owners will vary according to their income rather than according to the number of cars they own.

Willingness to Pay Higher Electric Bills

As shown in Chapter III, industrial smoke and gases rank high in the ratings of environmental damage; they rank just below automotive exhaust. One of the highly visible sources of industrial air pollution is the power-generating plant that burns fossil fuels. The willingness to pay for the reduction of pollution caused by these plants is a good test of the willingness to pay for the reduction of industrial air pollution in general; power plants are a familiar sight in many parts of the country and the eventual cost of pollution control to the consumer can be easily expressed as an increase in the electric bill.

Questions asked. In order to obtain an "anchor" or reference point, people were asked to name the amount of their last electric bill. Following this, they were asked how much more they would be willing to pay. Here are the questions:

- Now let's talk about electric power for a minute. How much was your last electric bill?
- Was this for 1 month or 2 months?
- Now suppose that the only way to stop the electric power plants from polluting is to install expensive equipment, and this equipment made your electric bill go up unless you used less electricity than you use now. How much more would you be willing to pay a month to clean up this form of pollution?

Only 12 percent of the people were unable to name the amount of the electric bill and they are excluded from the tabulations used here. Detailed tables are included in Volume II.

107

Amount volunteered. The average amount people said they would pay is $3.84 more per month than they pay now. Since the average reported bill is $17.42 per month, this respresents an increase of 22 percent. The larger the current monthly bill, the larger the additional amount people are willing to pay to stop air pollution from power plants; the percentage increase is quite stable. Table VI-9 shows the figures.

TABLE VI-9

ADDITIONAL MONTHLY AMOUNT WILLING TO PAY FOR ELECTRICITY TO CLEAN UP POWER-PLANT POLLUTION

		Current Monthly Electric Bill			
	Total Sample	Up to $10	$10.01 $15	$15.01 $20	Over $20
Amount Willing to Pay					
Total electricity users	$3.84	$2.74	$3.31	$3.83	$5.08
Rate industrial smoke and gas damage "a lot", "some"	$4.54*	$3.33	$3.85	$4.82	$5.79
Rate industrial smoke and gas damage "a little", "none"	$2.68	$1.64	$2.52	$2.06	$4.09
% Above or Below Average					
Total electricity users		-29%	-14%	0%	+32%
Rate industrial smoke and gas damage "a lot", "some"	+18%	-13%	0%	+26%	+51%
Rate industrial smoke and gas damage "a little", "none"	-30%	-57%	-34%	-46%	+ 6%

The concern about industrial air pollution, expressed as the environmental damage rating of industrial smoke and gases, has a strong effect on the amount people are willing to pay, but their current electric bill has an even stronger effect. The combined effect of the two is evident: people who now pay up to $10 a month for electricity and are not concerned about smoke damage, volunteer to pay $1.64 extra per month, an amount 57% below average; those who now pay over $20 and are concerned, volunteer to pay $5.79 extra, an amount 51 percent above average.

The monthly electric bill increases with household income and so does the amount willing to pay. The figures are summarized in Table VI-10.

TABLE VI-10

INCOME, SIZE OF ELECTRIC BILL AND ADDITIONAL AMOUNT VOLUNTEERED TO STOP AIR POLLUTION FROM POWER PLANTS

Income	Percent of Sample	Current Electric Bill	Additional Amount Willing to Pay	
$/year	%	$/month	$/month	% Increase
Under $3,000	11	12.37	1.57	13
$3,000 - $6,999	19	14.37	2.84	20
$7,000 - $14,999	38	17.54	4.35	25
$15,000 & over	21	21.90	5.61	26

NOTE: Eta correlation ratios when the additional amount willing to pay is the dependent variable are: Income, Eta = .122; Current electric bill, Eta = .105; Rating of smoke damage, Eta = .063.

These figures need no other comment than to point out that the additional amount people are willing to pay rises faster with income than the current electric bill does; The higher the income, the larger the percentage increase volunteered. Again, those who can better afford it are, on overage, willing to pay more than those who can afford less.

Willingness to Pay for Recycling Solid Waste

As shown in preceding chapters, solid waste ranks high in environmental damage ratings. Recycling, clean-up drives and anti-litter activities are mentioned often by people who report doing something to improve the environment.

Solid waste management is a complex issue. Again, we presented the issue in familiar terms: how much more than the current cost of waste disposal would people be willing to pay to have waste recycled?

Question asked. Since the cost of waste disposal is unknown to many people, the "anchor" or reference amount had to be included in the question which was asked as follows:

- Some people say that solid waste is becoming a major environmental problem not only in the handling and disposing of the waste material, but also in terms of resources used. For example, more paper requires more trees cut. Many people claim that the best solution to the solid waste problem from the environmental point of view is to re-use the waste material. In most cases it costs more to do that than simply to burn or bury it. The average family now spends about $80 a year on solid waste disposal. How much more would you be willing to pay per year to have waste material re-used or recycled?

About 6 percent of the people did not answer the question and they are excluded from the tables used in the discussion that follows. Complete tabulations are included in Volume II.

Amount volunteered. The average of all answers is $12, which represents a 15 percent increase over the $80 estimate given to people as the current cost of solid waste handling and disposal. Again, the amount volunteered varies with income and, to a lesser extent, with concern about solid waste damage to the environment. The figures are shown in Table VI-11.

TABLE VI-11

AMOUNT WILLING TO PAY ANNUALLY IN ADDITIONAL
SOLID WASTE DISPOSAL COSTS TO HAVE WASTE RECYCLED

		Household Income			
	Total Sample	Under $3,000	$3,000-$6,999	$7,000-$14,999	$15,000 & Over
Amount Willing to Pay					
Total sample (exc. N.A.)	$12	$ 4	$10	$13	$20
Rate solid waste damage "a lot", "some"	$14	$ 6	$11	$15	$23
Rate solid waste damage "a little", "none"	$10	$ 2	$ 7	$10	$17
% Above or Below Average					
Total sample (exc. N.A.)		-67%	-17%	+ 8%	+67%
Rate solid waste damage "a lot", "some"	+17%	-50%	- 8%	+25%	+92%
Rate solid waste damage "a little", "none"	-17%	-83%	-42%	-17%	+42%

That income is more strongly associated with willingness to pay for recycling is shown by the correlation ratios: Income, Eta = .224, solid waste damage rating, Eta = .158.

Willingness to Pay for Sewage Treatment

Untreated sewage ranks fourth among the twenty alleged sources of environmental damage rated in this survey. Are people willing to pay for sewage treatment?

Questions asked. The "anchor" or reference point for this question is the current cost of the sewer system serving the households where interviews took place. People who do not have a sewer system were not asked how much they would be willing to pay. The three questions asked follow:

- Do you know what you are paying for your sewer system now?
- How much is it per year?
- Some water pollution comes from incomplete treatment of sewer wastes. Water improvement requires additional treatment which would increase water and sewer bills or local taxes. How much more would you be willing to pay per year to provide extra treatment of sewage to clean up this form of water pollution?

Seventy-four percent of the sample have a sewer system serving their area, but only 39 percent of them could answer how much they pay for it.

Amount volunteered. The average annual sewer bill reported is $43; the additional amount volunteered for sewage treatment is $8.80 per year, that is a 20 percent increase over current costs. Table VI-12 shows the amounts by size of current sewer bill and by concern about untreated sewage damage. The higher the sewer bill and the greater the concern about damage, the larger the amount volunteered to pay for sewage treatment. The current sewer bill and concern about damage have similar effects on the amount volunteered.

TABLE VI-12

ADDITIONAL AMOUNT WILLING TO PAY ANNUALLY FOR
SEWAGE TREATMENT TO CLEAN UP WATER POLLUTION

	Total Have Sewer	Current Annual Sewer Bill			
		$1 - $20	$21 - $40	$41 or More	Don't Know
Amount Willing to Pay					
Total who have sewers	$ 8.80	$5.63	$ 8.14	$10.08	$ 9.19
Rate sewer damage "a lot", "some"	$10.31	$7.61	$10.27	$10.96	$10.55
Rate sewer damage "a little", "none"	$ 6.46	$3.31	$ 5.56	$ 8.63	$ 6.85
% Above or Below Average					
Total who have sewers		-36%	- 8%	+14%	+ 4%
Rate sewer damage "a lot", "some"	+17%	-14%	+17%	+24%	+20%
Rate sewer damage "a little", "none"	-27%	-62%	-37%	- 2%	-22%

The annual sewer bill increases with income and so does the amount volunteered to pay for sewage treatment; the higher the income, the larger the percentage increase volunteered.

TABLE VI-13

INCOME, SIZE OF SEWER BILL AND ADDITIONAL AMOUNT VOLUNTEERED TO PAY FOR SEWAGE TREATMENT

Income $/year	Percent of Sample %	Current Sewer Bill $/year	Additional Amount Willing to Pay $/year	Additional Amount Willing to Pay % Increase
Under $3,000	11	32	4	12
$3,000 - $6,999	19	39	6	15
$7,000 - 14,999	38	45	10	22
$15,000 & Over	21	47	14	30

NOTE: Eta correlation ratios when the amount willing to pay is the dependent variable are: Income, Eta = .158; Current sewer bill, Eta = .307; Rating of untreated sewage damage, Eta = .145.

Willingness to pay for Eliminating Water Pollution from Food Production and Processing

Factory effluent ranks next to untreated sewage in the public's rating of environmental damage. That the cost of waste treatment in food processing would mean higher food costs can be expressed and grasped easily. Thus, food processing provides a good vehicle to test people's willingness to pay for eliminating industrial water pollution.

Questions asked: The question was asked as follows:

- Some people say that a major cause of pollution of our lakes, streams and rivers is the food industry, both producing the food and processing it. Some people think not. Cleaning up this form of pollution may raise the cost of food items as much as $30 a year for the average family. How much more than $30 a year would you be willing to pay per year to clean up this form of pollution?

About 6 percent of the people did not answer this question. They have been excluded from the data used in this discussion.

Amount Volunteered. The average amount volunteered is $7.43 per year above the $30 mentioned in the question. In effect, this means that people are willing to pay an average of $37.43 per year to eliminate water pollution in food production and processing. Table VI-14 shows how the additional amount people volunteered varies by income and by concern about industrial effluent damage to the environment.

The amount volunteered increases dramatically with income; from $2.74 by those in households under $3,000 to $12.51 by those in households over $15,000 annual income. That increase is much more pronounced among those who are concerned about factory effluent damage than among those who are not.

TABLE VI-14

ADDITIONAL AMOUNT WILLING TO PAY ANNUALLY IN EXCESS OF $30 FOR FOOD PRODUCTION AND PROCESSING COSTS TO HELP CLEAN UP WATER POLLUTION

		Household Income			
	Total Sample	Under $3,000	$3,000-$6,999	$7,000-$14,999	$15,000 & Over
Amount Willing to Pay					
Total sample (exc. N.A.)	$7.43	$2.74	$5.38	$7.80	$12.51
Rate factory effluent damage "a lot", "some"	$8.91	$2.77	$6.12	$8.92	$14.69
Rate factory effluent damage "a little", "none"	$5.53	$2.72	$4.73	$6.25	$ 8.48
% Above or Below Average					
Total sample (exc. N.A.)		-63%	-28%	+ 5%	+68%
Rate factory effluent damage "a lot", "some"	+20%	-63%	-18%	+20%	+98%
Rate factory effluent damage "a little", "none"	-26%	-63%	-36%	-16%	+14%

Again, income is more strongly associated with the amount willing to pay (Eta = .217) than with concern about effluent damage (Eta = .184). It is also worth noting that concern about fertilizer and pesticide damage, not shown in Table VI-14, is as strongly associated with the amount willing to pay (Eta = .184) as concern about industrial effluent damage is.

So far, we have looked at monetary costs of pollution abatement. We now turn to the feelings about a hypothetical factory closing because of pollution problems.

Feelings About a Factory Closing

Occasionally, newspapers carry stories about factories closing because of pollution problems. This sort of dislocation and hardship was selected for this survey to represent another expression of the cost of protecting the environment.

Questions asked. The following three questions were asked:

- Have you heard of any cases in your area where a factory decided to close down for good rather than spend money to stop polluting the air or water?
- Suppose that a factory in your area were told by the government to stop polluting the air or the water and the company decided to close the factory down and build a new, modern one in another area. Suppose that by closing the factory down, 200 people were thrown out of work in your area. Now I'd like your reaction to this factory closing. First, assuming that these 200 people were left to find new jobs on their own and later assuming that the government would retrain these people and help them find new jobs.

At this point the respondent was given a card with the following statements:

A. It's too bad but if that's what it takes to eliminate pollution, it has to be done.

B. It's really too bad, but I suppose one has to take the bad with the good if we are going to get rid of pollution.

C. It's hard to decide whether it might be better to accept a little more pollution for a while than to see people laid off.

D. It's a very bad thing to do. I don't think they should lay people off. I'd rather have pollution than layoffs.

E. It's a terrible thing. I can't see any justification for laying people off. Pollution is nothing compared to layoffs.

The interviewer continued as follows:

- Which statement on this card comes closest to expressing how you would feel about the factory closing if these people were left to find jobs on their own?
- Which statement on this card comes closest to expressing how you would feel about the factory closing if the government retrained these people and helped them find new jobs?

Feelings about factory closing related to awareness of one in the area. Only 10 percent of the people have heard of a factory closing because of pollution problems in their area. Table VI-15 shows how their reactions compare with those of the majority who have not heard of a factory closing in their area.

When asked to assume that people would be left to find jobs on their own, people aware of a factory closing in their area react quite similarly to those who are not aware of a factory closing. Significantly, about one-third of the people say "it is hard to decide..."

and those who accept the closing outnumber those who reject it. We can only conclude that factory closings because of pollution problems are not an issue at the national level, particularly when government assistance is assumed.

TABLE VI-15

FEELINGS ABOUT FACTORY CLOSINGS RELATED TO AWARENESS OF ONE IN THE AREA

BASE	Total Sample (3038)	Aware of One (307)	Not Aware (2672)
	%	%	%
Assuming people were left to find jobs on their own			
It's too bad but it has to be done...	18	22	17
It's really too bad...	25	25	25
It's hard to decide...	35	31	35
It's a very bad thing...	10	9	11
It's a terrible thing...	10	11	10
Assuming goverment retrained and helped people find jobs			
It's too bad but it has to be done...	48	48	48
It's really too bad...	21	20	21
It's hard to decide...	19	19	19
It's a very bad thing...	4	4	4
It's a terrible thing....	4	4	4

NOTE: Phrases have been shortened for this table. For full text see page 97.

121

Effect of government assistance. People react much more favorably to the possibility of a factory closing when they are asked to assume government help with job retraining and placement assistance than when they are asked to assume that people would be left to find jobs on their own. Looking at Table VI-15, the shift in frequencies is striking.

Without government assistance, the most frequent answer is that it is hard to decide whether it might be better to accept a little more pollution for a while than to see people laid off. Thirty-five percent of the sample give that answer, which usually signifies a lack of involvement with the issue. On the accepting side, 25 percent say "it's really too bad but one has to accept the good with the bad" and 18 percent say "it's too bad but it has to be done". In total, 20 percent reject the idea of a factory closing and 43 percent accept it.

When government assistance is assumed, the neutral, undecided answers drop to 19 percent of the total sample; the accepting ones increase to 69 percent, and only 8 percent continue to reject the closing. The assumption of government assistance lets people off the hook; those who were neutral are now relieved of the need to make a difficult decision and readily accept the factory closing.

Feelings about factory closing related to occupation. Blue collar workers are more apt to reject the idea of a factory closing than white collar workers are. When no goverment assistance is assumed, the frequencies of rejection ("it's a very bad thing", "it's a terrible thing") are 21 percent of the blue collar workers and 14 percent of the white collar workers. The neutral or undecided are 35 percent of the blue collar and 37 percent of the white collar. (Tabulations appear in Volume II.)

Feelings about factory closing related to concern about environmental damage. Table VI-16 shows the effect of concern about environmental damage from industrial smoke and gases on the feelings about a factory closing expressed by white collar and blue collar and farm workers. We use the data assuming people are left to find jobs on their own because, as shown earlier, when government assistance is assumed, a large majority accept the closing.

The effect of both occupation and concern about environmental damage on acceptance of a factory closing is small, with the occupation effect being the weaker of the two. (Occupation, Eta = .141; Industrial smoke and gases, Eta = .152) The association with the damage rating of industrial effluent is very weak (Eta = .095). (Tabulations for industrial effluent appear in Volume II.)

TABLE VI-16

FEELINGS ABOUT FACTORY CLOSING RELATED TO RATING OF FACTORY SMOKE AND GAS DAMAGE TO THE ENVIRONMENT

		Occupation	
	Total Employed	White Collar	Blue Collar, Farm
	%	%	%
Accept Factory Closing			
Total employed	43	47	41
Rate smoke and gas damage "a lot" or "some"	47	51	44
Rate smoke and gas damage "a little" or "none"	36	38	35
% Points Above or Below Average			
Total employed		+4	-2
Rate smoke and gas damage "a lot" or "some"	+4	+8	+1
Rate smoke and gas damage "a little" or "none"	-7	-5	-8

Preference Between Higher Prices and Higher Taxes

Unless one assumes a significant realignment of priorities in both the private and public sectors, environmental protection will increase prices and taxes. In order to probe public preference between these alternatives, the following question was asked:

- To clean up pollution and to improve the quality of our environment will cost money. Suppose you have two choices to pay for the cost of improving the environment. One choice is to pay higher prices for those products that will cost more to make if we want to stop pollution. The other choice is to pay higher taxes to have enough money available for pollution control. Given these two choices, would you prefer to pay higher prices or pay higher taxes?

The answers are shown in Table VI-17. Among the whole sample, 62 percent prefer higher prices and 29 percent prefer higher taxes. The others either could not select one of these choices or wished another solution were possible. The preference for higher prices rather than higher taxes increases in frequency among households with incomes of $7,000 or more.

TABLE VI-17

PREFERENCES BETWEEN HIGHER TAXES
AND HIGHER TAXES BY INCOME LEVEL

		Household Income			
	Total Sample	Under $3,000	$3,000-$6,999	$7,000-$14,999	$15,000 & Over
Percent of Sample	(100%)	(11%)	(19%)	(38%)	(21%)
BASE	(3038)	(333)	(585)	(1144)	(640)
	%	%	%	%	%
Preference					
Pay higher prices	62	57	57	64	67
Pay higher taxes	29	30	34	30	27
Neither	7	12	7	5	5
Don't know	2	1	2	1	1

Summary

In this chapter we have discussed people's willingness to pay for specific steps to prevent pollution and their reactions to three hypothetical increases in car prices to pay for emission control devices. We have found the amounts people volunteer to pay for motor vehicle emission control to be a good indicator of their relative willingness to pay. It is reasonable to assume that this would hold true for the other pollution abatement steps discussed.

Both income and concern about damage to the environment effect willingness to pay for pollution abatement. Income has a greater effect than concern but the sum of the two effects is considerably greater than either one alone.

When asked how much they would be willing to pay for antipollution devices in new cars, people volunteer an average of $62 per car. The range above and below this average is large. Income and concern about car exhaust damage make a difference; the higher the household income, and the greater the concern, the more people are willing to pay.

When it comes to higher operating costs because of increased maintenance and lower efficiency, the average amount volunteered is $27 per year. Again, income and concern about car exhaust make a difference in the amount volunteered.

The amounts people volunteer are not the maximum amounts they are willing to pay. While the average amount volunteered to pay for antipollution devices in new cars is $62, a majority of motorists, 53 percent to be exact, react positively to a hypothetical increase of $150 in the price of new cars in order to pay for antipollution devices. As would be expected, the frequency of positive reactions diminishes as the hypothetical price increases: at $300, 28 percent react positively; and at $500, only 15 percent react positively to the price increase. We estimate that, at 1973 prices, an average increase of about $250 per car would be the maximum to receive the support of a majority of car owners.

Turning to air pollution control at electric power generating plants, we find that people report an average monthly electric bill of $17.42 and volunteer to pay $3.84 extra to control pollution at those plants. This amount represents a 22 percent increase in the monthly bill. The higher the income, the larger the monthly electric bill and the larger the increase people are willing to pay. Concern about air pollution also affects willingness to pay. People who are concerned about the damage air pollution does to the environment are willing to pay more per month than those who are not concerned about it.

Concerning solid waste, people volunteer to pay, on average, $12 more per year than the estimated $80 cost mentioned to them as the average amount currently spent in solid waste handling and disposal. This represents a 15 percent increase people are willing to pay in order to have solid waste recycled.

As for sewage treatment, the question was asked only of people who have public sewer systems; they amount to three-fourths of the sample. The amount they volunteer to pay for sewage treatment is $8.80 per year in addition to what they pay now for the sewer system. Those who could name the amount paid currently report $43 a year on average. Thus, the $8.80 represents a 20 percent increase in what people are willing to pay for sewage treatment in order to reduce water pollution. The greater the amount people pay now, the more they are willing to pay extra for sewage treatment. Income and concern about water pollution also affect their willingness to pay.

Turning to the reduction of water pollution from food production and processing, people volunteer to pay $7.43 more than the $30 mentioned to them as the increase in annual food costs to the average family that may be required to eliminate these sources of water pollution. Again, the amount volunteered increases with income and with concern about water pollution.

When asked how they would feel about a factory closing in their area because of pollution problems, people were asked first to assume there would be no help from the government for job retraining and placement; then they were asked to assume the government would help. When no special government help is assumed, 35 percent of the people find it hard to choose between a little more pollution for a time and seeing people laid off. Usually, this kind of answer reveals a lack of involvement in the issue presented in the question. When special government help for the people laid off is assumed, only 19 percent of the people find the choice difficult to make. Acceptance of the closing increases from 43 percent if no government help is assumed to 69 percent if that help is assumed.

When it comes to having to make a choice between higher prices and higher taxes in order to pay for pollution control, twice as many people choose higher prices as choose higher taxes (62% vs. 29%). The preference for higher prices increases with income.

129

VII. OVERALL WILLINGNESS TO PAY FOR A BETTER ENVIRONMENT

In the preceding chapter we discussed people's willingness to pay for specific measures that will be or could be taken to protect the environment. In this chapter we will discuss an analysis of factors that explain people's overall willingness to pay.

Action is the ultimate test of beliefs and convictions. Similarly, a person's opinions can be better understood when his actions are known. Unfortunately, in the area of environmental protection we lack readily identifiable actions to validate people's opinions. The issues are seldom tested in the ballot box and personal participation in recycling and other activities discussed in an earlier chapter are not widespread enough to be a universal test of people's opinions.

In this situation, a surrogate measure of people's willingness to act is appropriate to our purpose. By asking people to project their behavior under given conditions, we can be confident of obtaining information that tells us approximately what people will do under those conditions. In this study, we have chosen the overall willingness to pay for a better environment as that measure.

The purpose of the analysis discussed in this chapter is to gain a better understanding of the factors that account for the large variation observed in people's willingness to pay. Some people do not volunteer to pay even a few cents; others volunteer to pay large amounts. What is there about their age, income and opinions that can help us understand differences in people's willingness to pay for a better environment?

Question Asked

The following question, which preceded the ones discussed in Chapter VI, was used to measure overall willingness to pay for a better environment:

- To clean up pollution and to improve the quality of our environment will cost money. Some people say they are not willing to pay anything at all. Others say they are willing to pay quite a lot. How much would you be willing to pay a year to improve the quality of your environment?

Meaning of Dollar Amounts

In Chapter VI we discussed several measures of willingness to pay and how the amount people volunteered to pay for antipollution devices relates to people's reactions to three hypothetical price increases. We learned that the amounts people volunteer to pay in answer to open-end questions do not represent the limit of their willingness to pay. Many who volunteered nothing at all were actually willing to pay $150 for emission control systems in automobiles. While the amount volunteered is not the maximum they will pay, it was found to be a good measure of relative willingness to pay; the greater the amount volunteered, the greater the likelihood of accepting larger price increases when faced with them.

It follows that, when discussing overall willingness to pay, we should not take the amounts mentioned by people literally; we should take them as a means of arraying the adult population from highest to lowest willingness to pay. Consequently, throughout this chapter we will use the percentage above or below average rather than the actual dollar amount. The average amount for the whole sample is $71.

Multivariate Analysis of Overall Willingness to Pay

The purpose of the analysis that follows is to learn the effects of age, income and concern about environmental issues on peoples overall willingness to pay. We have learned so far that concern about environmental issues varies with age and income and that willingness to pay for specific measures to reduce pollution increases with income and concern about damage to the environment. We will take the analysis one step further by looking at ten factors together; we will attempt to measure the effect of each factor by holding the other factors constant. For example, we know that age and income are correlated; income rises with age up to a point and then declines. To measure the effect of age as such, we have to hold income constant; conversely, to measure the effect of income, we have to hold age constant.

For this purpose, we chose Multiple Classification Analysis in preference to other analysis of variance techniques because MCA is particularly well suited to survey data which includes many more classification variables than continuous ones.

We have attempted to present this analysis in a non-technical manner; further details will be found in Appendix B. As an aid to the reader not versed in the analysis of variance, we display the data with charts designed to convey visually the differences in variance between predictor variables.

The following variables will be examined for their effect on willingness to pay; correlation ratios (Beta) are shown in parentheses.

A. Concerns about damage to the environment

Fertilizers and pesticides (.125)
Radiation from nuclear facilities (.108)
Solid waste (.084)
Strip mining (.059)
Factory effluent (.059)
Ground level noise (.035)
Automobile exhaust (.025)

B. Demographic factors

Income (.182)
Age (.084)

C. Awareness of EPA (.108)

We will discuss these variables in decending order of effect on willingness to pay.

For the convenience of the reader, we are reproducing here the damage ratings from Table III-1 for the seven items used in this analysis.

	Rating of Damage to Environment				
	Hardly Any/None	Only a Little	Not Sure	Some	A Lot
	%	%	%	%	%
Fertilizers & pesticides	23	16	16	23	21
Strip mining	36	5	28	8	23
Factory effluent	23	8	13	14	42
Ground level noise	31	18	4	22	26
Automobile exhaust	15	12	4	23	46
Radiation	44	7	29	7	13
Solid waste	23	13	6	23	35

Guide to Charts and Analysis

The charts included in this chapter are designed to convey a visual impression of three concepts used in the analysis: the frequency of each level of concern, income, age and awareness; the usefulness of each factor as an indicator of willingness to pay; and the kind of association between each factor and willingness to pay. The data tables supporting the charts are included in Appendix B.

Frequencies are represented by the width of the bars in the charts. For example, Chart VII-1 shows the information about household income. Each income bracket is represented by a bar and the width of the bar is proportional to the percentage of the sample that falls in that income bracket. (People with incomes under $3,000 have been excluded.) The height of the bar is proportional to the average amount volunteered to pay by the respondents in that income bracket;

the amount is expressed as a percentage above or below the average amount for the sample used in the analysis.

The comparative usefulness of each factor as an indicator of willingness to pay is conveyed by the total shaded area. For example, the total shaded area in the income chart (VII-1) is the largest of the ten charts; the shaded area in the automobile exhaust chart (VII-10) is the smallest of the ten charts. Income has the strongest association with willingness to pay; automobile exhaust has the weakest association with willingness to pay. Income is the best indicator of willingness to pay; concern about automobile exhaust is the poorest indicator of willingness to pay among the ten analyzed here.

The type of association between each factor and willingness to pay is revealed by the profile of the bars in the chart. For example, income is positively correlated with willingness to pay; the higher the income, the larger the amount volunteered to pay. Age (Chart VII-6) is negatively correlated with willingness to pay; with the exception of two age brackets, the older the person, the lower the amount volunteered to pay for a better environment.

The analysis presented here reveals the effect of income and age on people's willingness to pay. It reveals the effect of awareness of EPA, an indirect measure of involvement. It also reveals the effect of representative, specific concerns about damage to the environment.

It shows that some issues are virtually settled and are no longer good indicators of overall willingness to pay for a better environment. Other issues are not settled; some of them are good indicators of willingness to pay, some are not.

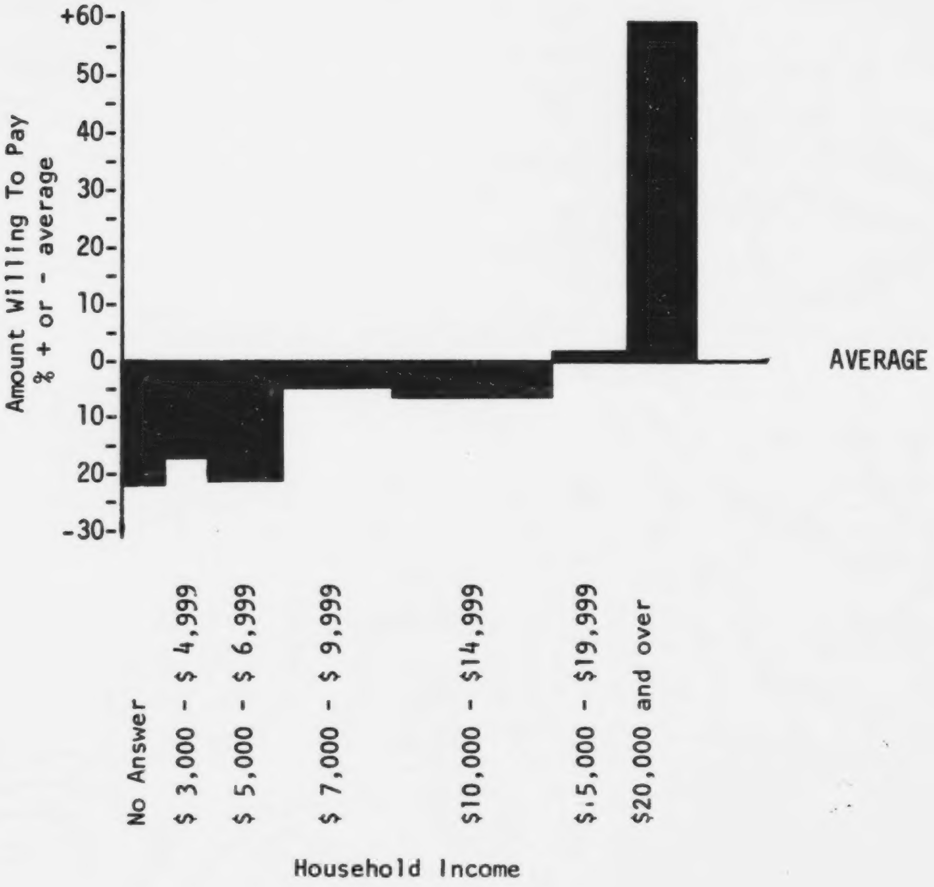
Effect of Household Income on Willingness to Pay

It is not surprising that household income is the best indicator of willingness to pay for a better environment. Its effect is strong: people in households with incomes under $7,000 are willing to pay 20 percent less than the average amount; those in the $7,000 to $20,000 range volunteer amounts close to average; and those in the $20,000 and over class volunteer 58 percent more than average. The better they can afford it, the greater the amount people are willing to pay to improve the environment. (Chart VII-1)

It should also be noted that because income is correlated with other factors analyzed here, the inclusion of income in this analysis makes the measurement of other effects more accurate.

CHART VII-1

ADJUSTED EFFECT OF INCOME ON WILLINGNESS TO PAY FOR A BETTER ENVIRONMENT



Effect of Concern About Fertilizer and Pesticide Damage

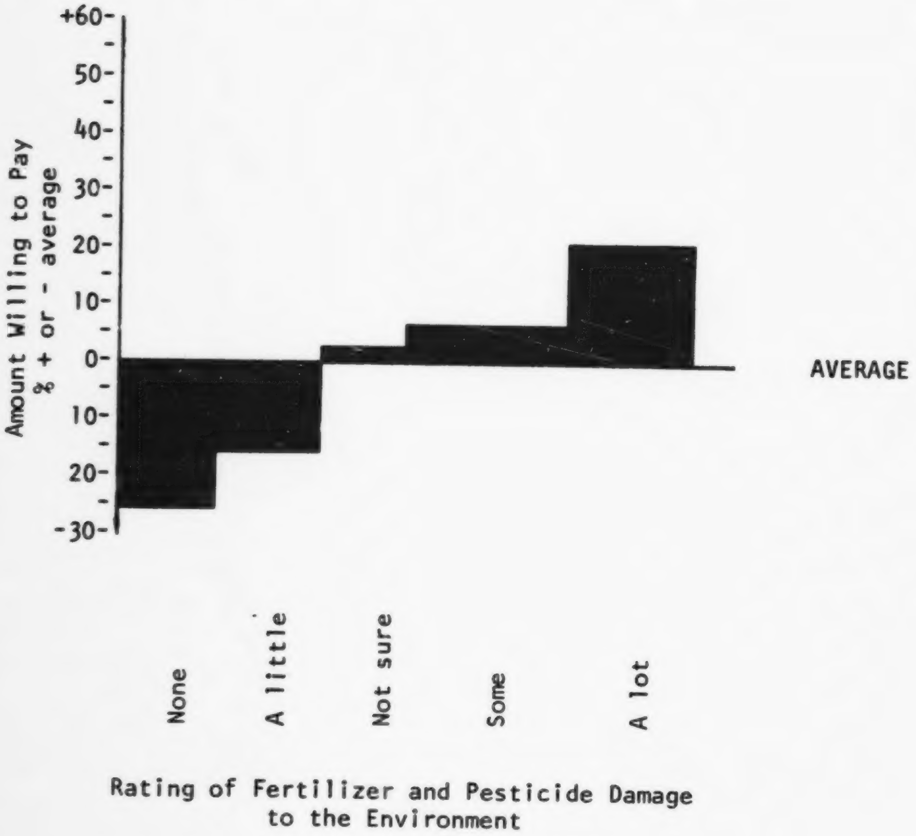
Concern about fertilizer and pesticide damage to the environment ranks second among the ten factors included in this analysis in its effect on overall willingness to pay for a better environment. That concern and willingness to pay show a strong, positive correlation between them.

When people are classified by their assessment of damage done by fertilizers and pesticides, their differences in willingness to pay are very pronounced; they range from 26 percent below average if they say no damage is done, to 22 percent above average if they say a lot of damage is done by fertilizers and pesticides. (Chart VII-2)

People are divided on this issue: about four out of ten are concerned about it; about half of them are not concerned about it; and the rest are undecided. Thus, it stands in sharp contrast with motor vehicle exhaust, an issue virtually settled in people's minds. Fertilizers and pesticides are an issue that is certainly not settled and concern about this issue is a strong indicator of willingness to pay for a better environment.

CHART VII-2

ADJUSTED EFFECT OF FERTILIZER AND PESTICIDE DAMAGE RATING ON WILLINGNESS TO PAY FOR A BETTER ENVIRONMENT



Effect of Concern About Radiation

The effect of concern about damage to the environment caused by radiation from nuclear facilities ranks third among the ten factors examined. The relationship between that concern and willingness to pay cannot be described with a straight line; the damage rating level and the amount willing to pay do not change in unison, so to speak. (Chart VII-3)

Nearly one-third of the people have not formed an opinion about the damage done by radiation from nuclear facilities and, judging by the low willingness to pay, they have no interest in the issue and little interest in environmental protection.

A large group, over 40 percent, believe that no damage is being done by radiation from nuclear facilities and, judging by their above-average willingness to pay, they are people who care about the environment.

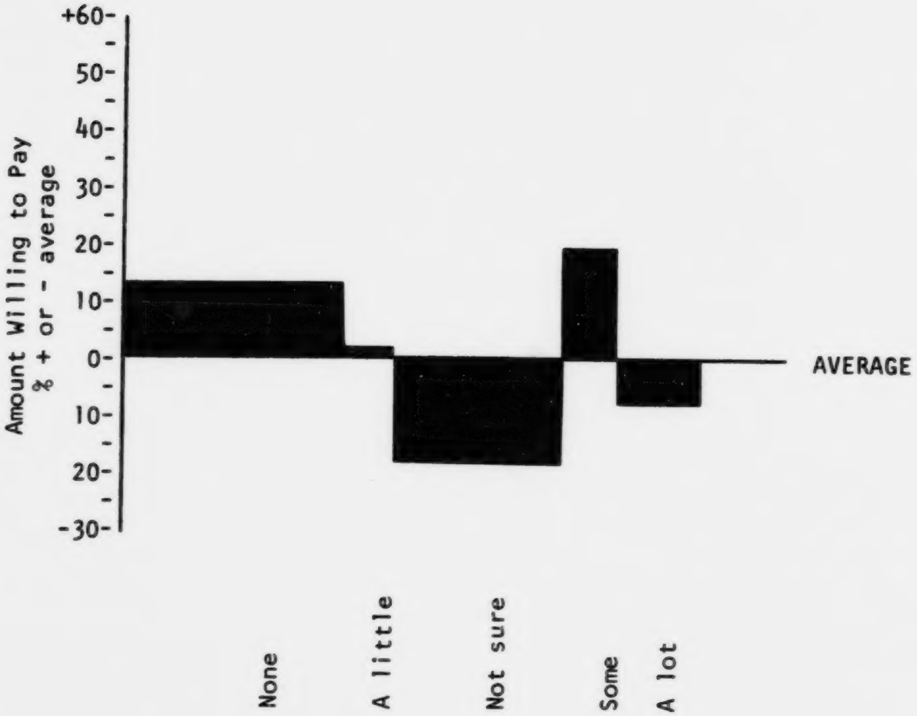
A small group, less than 10 percent, believe that radiation does some damage to the environment and are also willing to pay an above-average amount. These people and the ones who believe no damage is done by radiation share a common concern about the environment but differ in their assessment of the damage done by radiation.

About one out of six people believe that radiation from nuclear facilities does a lot of damage but their willingness to pay is below average. As pointed out in an earlier chapter, these people may express anxiety rather than a reasoned concern about the environment. These people tend to be less educated and less aware of EPA, a reasonable indicator of involvement in environmental issues.

On the whole, radiation is found to be an important issue characterized by differences of opinion and some amount of anxiety. It is an uncertain indicator of concern about the environment and willingness to pay for a better one.

CHART VII-3

ADJUSTED EFFECT OF RADIATION DAMAGE RATING ON WILLINGNESS TO PAY FOR A BETTER ENVIRONMENT



Rating of Radiation Damage
to the Environment

Effect of Awareness of EPA

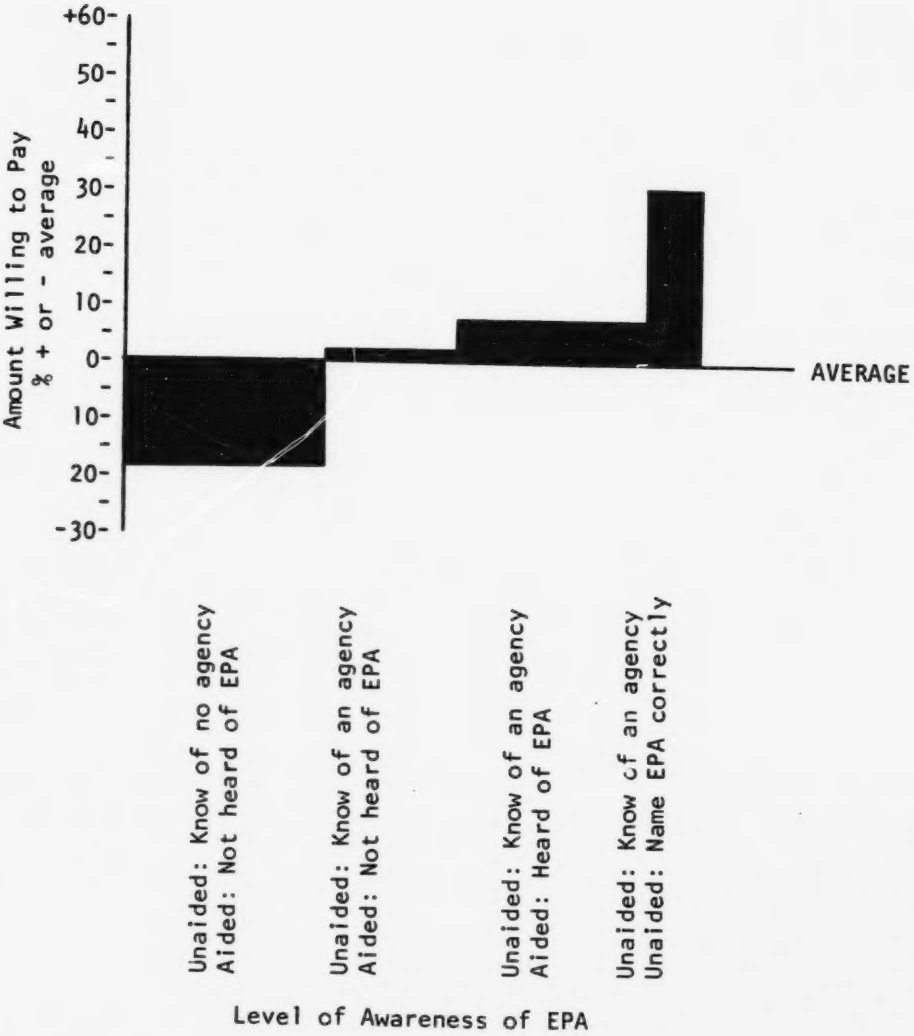
Awareness of EPA was discussed in Chapter VI. The awareness levels used for this analysis combine two measures discussed in that chapter. It will be recalled that unaided awareness was measured with an open-end question asking the respondent if he knows of a government agency directly involved in fighting pollution and protecting the environment and a question asking if he knows the agency's name. Aided awareness was measured by naming the Environmental Protection Agency and asking the respondent if he had heard about it before. For this analysis, respondents have been classified according to their answers to these three questions.

Awareness of EPA ranks fourth among the ten factors and is positively correlated with willingness to pay; the higher the level of awareness, the greater the amount volunteered to pay for a better environment. (Chart VII-4)

Awareness of EPA has a strong effect on willingness to pay. People who are not at all aware of the Agency, that is they have never heard of it, volunteer to pay an amount 17 percent below average. At the other end, people who can readily name the agency, unaided, volunteer an amount 29 percent above average.

CHART VII-4

ADJUSTED EFFECT OF EPA AWARENESS LEVEL
ON WILLINGNESS TO PAY FOR A BETTER ENVIRONMENT



Effect of Concern About Solid Waste

The effect of concern about solid waste on overall willingness to pay for a better environment ranks fifth among the ten factors examined in this analysis. The correlation between concern about solid waste and willingness to pay is negative; the more damage a person attributes to solid waste, the smaller the amount that person is willing to pay for a better environment. (Chart VII-5)

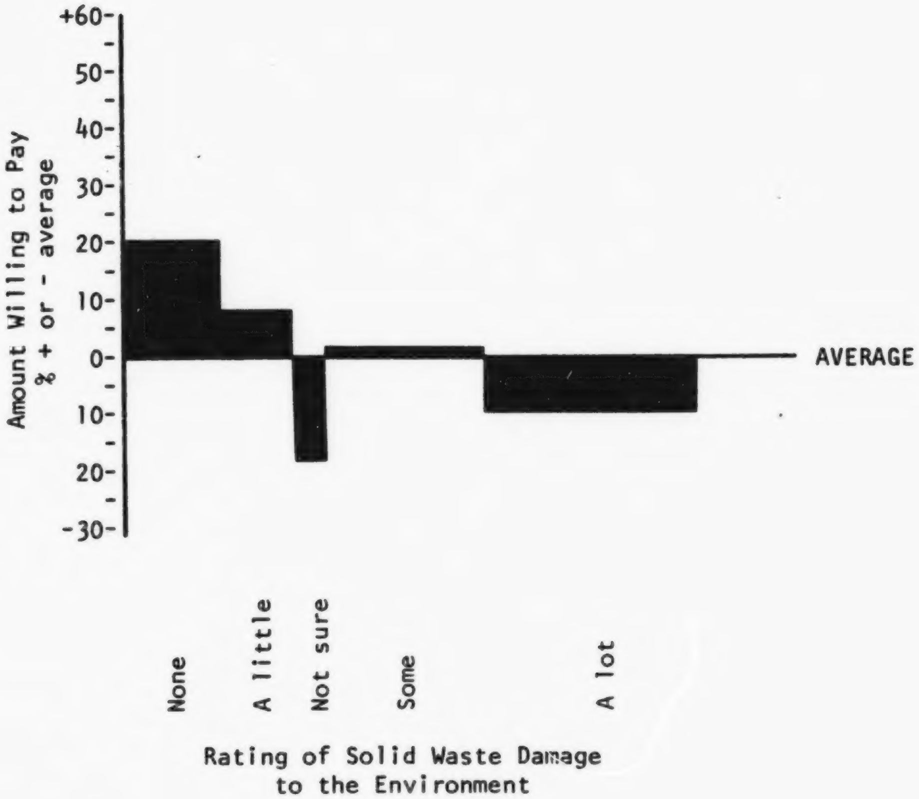
In Chapter VI we showed that people are willing to pay for recycling and that income has a much greater effect than concern about solid waste on the amount volunteered to pay for recycling. Now we find that concern about solid waste is not a reliable indicator of overall willingness to pay for a better environment.

We suspect that while most people express concern about solid waste, the intensity of that concern is often not related to the ecological problem. In Chapter III we showed that the health effect of solid waste is rated much higher than the damage to the environment. This also occurs with sewage, industrial smoke and radiation. It does not occur with factory effluent, fertilizers and motor vehicle exhaust. This gives us reason to believe that anxiety and sensory perceptions influence the intensity of concern expressed about some items, including solid waste.

It is not surprising than an anxiety response or a narrow concern with sensory symptoms of pollution should correlate negatively with willingness to pay for a better environment, for those types of responses not only introduce "noise" in the data but also lack the rationality that is inherent in the correlations being measured.

CHART VII-5

ADJUSTED EFFECT OF SOLID WASTE DAMAGE RATING ON WILLINGNESS TO PAY FOR A BETTER ENVIRONMENT



147

Effect of Age

Age ranks sixth among the ten factors examined here and it has a much smaller effect than income on willingness to pay.

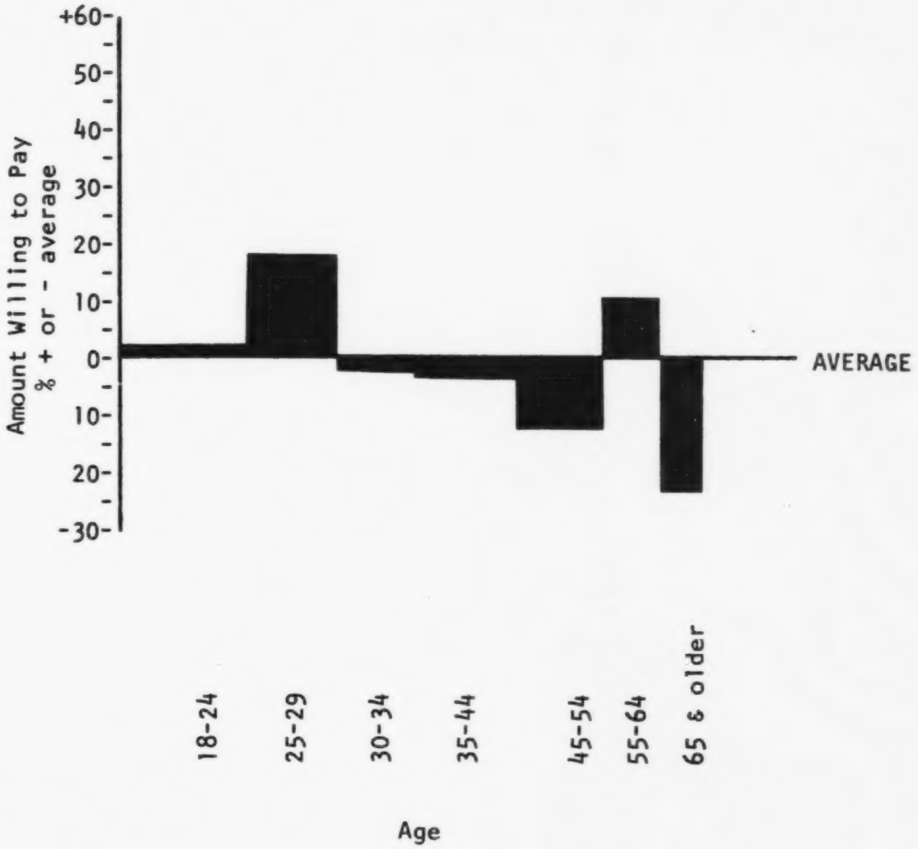
Age is negatively correlated with overall willingness to pay (Chart VII-6) This negative correlation was to be expected; we have found consistently that younger people express greater concern about the environment than older people do. Yet the problem may have another dimension.

We mentioned earlier that in examining each factor, the other factors are held constant. Thus, when looking at the effect of age, the income differences between age groups are, in effect, removed. But this procedure does not take account of the life cycle in household expenditures. We suspect that this factor may be responsible for some of the negative correlation between age and willingness to pay.

Total family expenditures for current consumption reach a peak at age 35 to 44, when family size reaches its peak. Expenditures for education reach a peak at age 45 to 54, when parents are most likely to have children in college. The cycle of family expense commitments illustrated by these two facts must be a contributing factor to the willingness to pay we have measured and may explain why at age 25 to 29 and 55 to 64 people volunteer to pay above-average amounts.

CHART VII-6

ADJUSTED EFFECT OF AGE ON WILLINGNESS TO PAY FOR A BETTER ENVIRONMENT



Effect of Concern About Strip Mining

Strip mining damage ranks seventh among the ten factors in its effect on willingness to pay for a better environment.

The correlation between strip mining damage and overall willingness to pay is positive but not strong. (Chart VII-7)

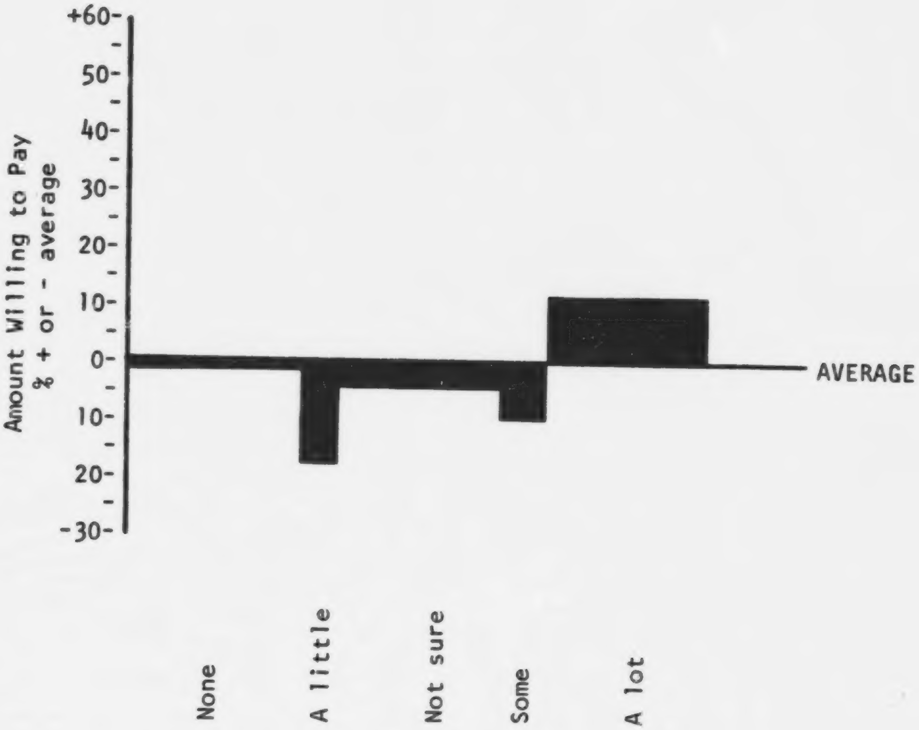
People who say strip mining does no damage constitute about one-third of the sample and they are only slightly below average in willingness to pay. Nearly another third are not sure and volunteer to pay an amount 4 percent below average. About one-fourth say it does a lot of damage and they are willing to pay 12 percent above average.

In Chapter III, we showed that concern about strip mining ranks tenth among the twenty items rated on damage to the environment. The more educated are much more likely to be concerned about it than the less educated. Those aware of EPA are also much more likely to be concerned about it than those not aware. To many others, strip mining is not an important issue.

These findings suggest that strip mining is not a popular issue but cannot be dismissed as unimportant to public opinion. Those who are most concerned about it are also well above-average in willingness to pay, indicating a commitment greater than the commitment many other issues evoke.

CHART VII-7

ADJUSTED EFFECT OF STRIP MINING DAMAGE RATING ON WILLINGNESS TO PAY FOR A BETTER ENVIRONMENT



Strip Mining Damage Rating

Effect of Concern About Factory Effluent

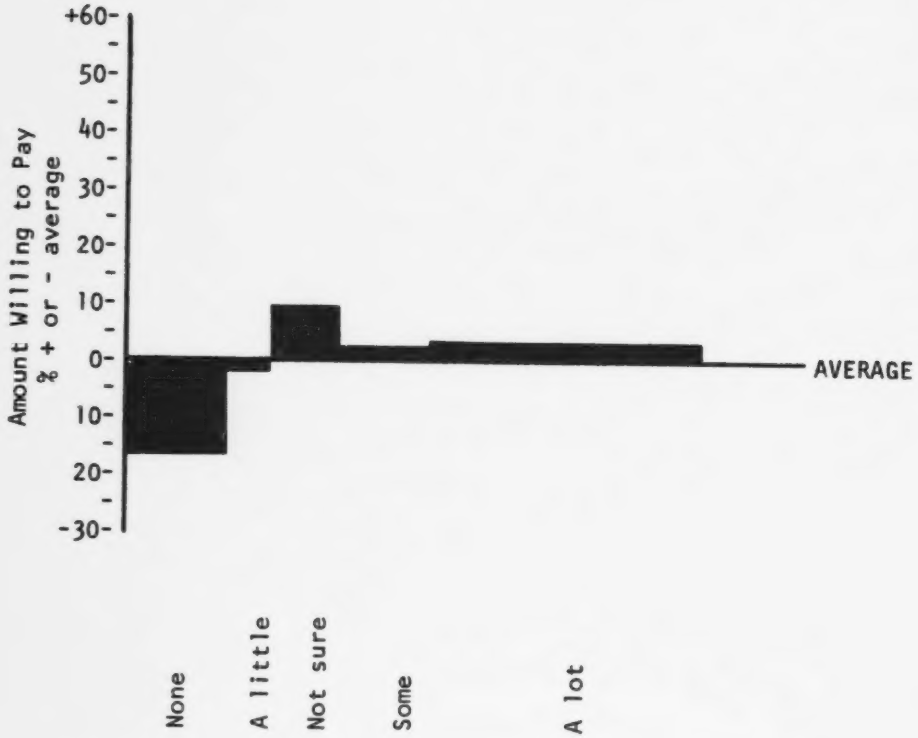
Factory effluent ranks eighth among the ten factors used in this analysis; its effect on willingness to pay is relatively small. (Chart VII-8)

The correlation between concern about factory effluent and willingness to pay is positive but much of its effect is due to the group of people who say it does no damage; they volunteer to pay 16 percent less than average and include nearly one-fifth of the sample. Nearly one-half of them live in non-metropolitan areas. Those who say it does a lot of damage are willing to pay only 3 percent more than average and include nearly one-half of the sample analyzed here.

These findings suggest that factory effluent is moving into the category of settled issues; so many people accept the fact that untreated industrial effluent damages the environment that their number includes both people willing to pay a lot and people willing to pay little.

CHART VII-8

ADJUSTED EFFECT OF FACTORY EFFLUENT DAMAGE RATING ON WILLINGNESS TO PAY FOR A BETTER ENVIRONMENT



Rating of Factory Effluent Damage to the Environment

Effect of Concern About Ground Level Noise

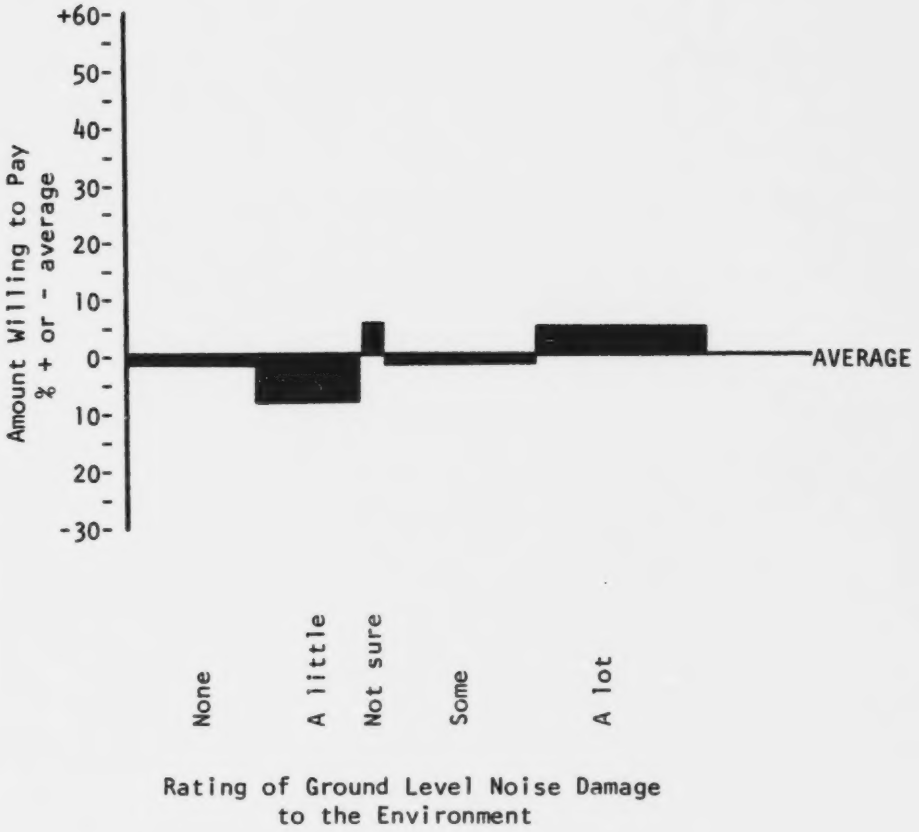
The effect of concern about ground level noise ranks ninth among the ten factors included in this analysis.

The association between the two is very weak. Although positively correlated, overall willingness to pay is only a few percentage points below average when concern is low and a few points above average when concern is high. (Chart VII-9)

People are almost equally divided in their opinion about the damage done by noise and their opinions are a poor predictor of willingness to pay for a better environment.

CHART VII-9

ADJUSTED EFFECT OF GROUND LEVEL NOISE DAMAGE RATING ON WILLINGNESS TO PAY FOR A BETTER ENVIRONMENT



Effect of Concern About Automobile Exhaust

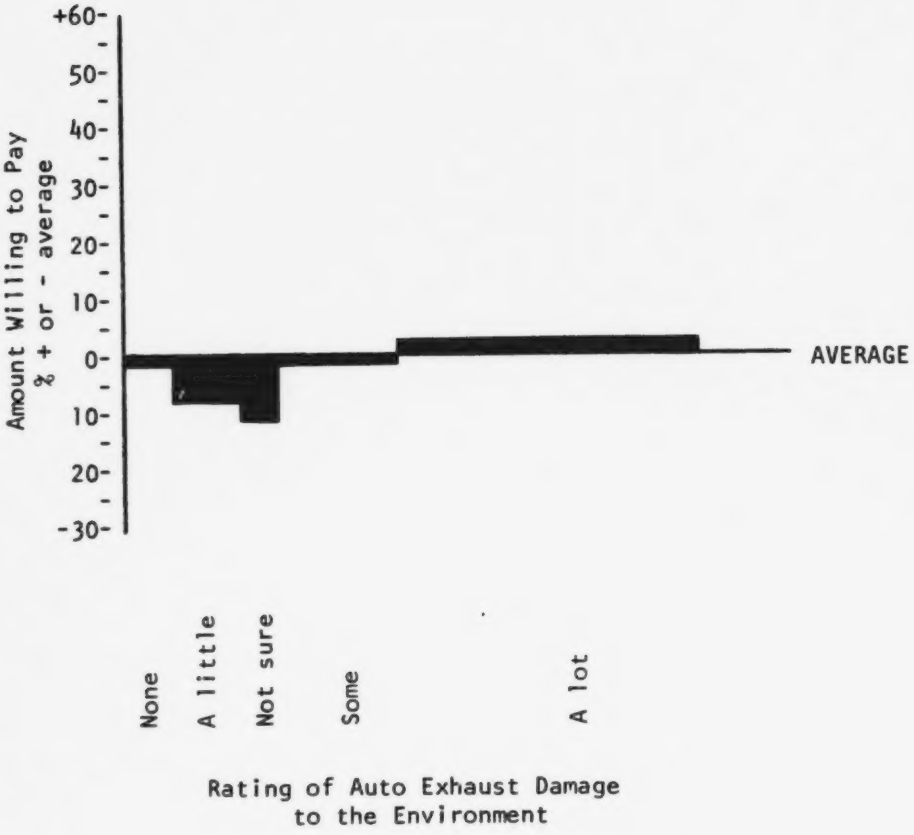
Concern about automobile exhaust damage ranks last among the factors analyzed here; it is positively correlated with the amount people volunteer to pay for a better environment but that correlation is very weak. (Chart VII-10)

The people who are most concerned volunteer to pay an amount only 2 percent above average. The less concerned volunteer to pay amounts only slightly below average.

By now, about three-fourths of the people believe that automobile exhaust damages the environment. It follows that the average amount volunteered by a majority cannot be very different from the average amount volunteered by the whole sample. This is why concern about automobile exhaust is a poor indicator of willingness to pay for a better environment. This is a settled issue in the minds of people, a fact confirmed by the willingness to pay for emission controls discussed in Chapter VI.

CHART VII-10

ADJUSTED EFFECT OF AUTOMOBILE EXHAUST DAMAGE RATING ON WILLINGNESS TO PAY FOR A BETTER ENVIRONMENT



Summary

Household income is the best indicator of overall willingness to pay for a better environment. This was found to be true also of people's willingness to pay for specific pollution abatement programs. The people who are willing to pay the most are those who can best afford it.

Age has a moderate effect on willingness to pay. The shape of the relationship between age and willingness to pay suggests that the life cycle of family expenditures patterns contributes to the generally negative correlation between age and income.

Awareness of EPA is a rather good indicator of overall willingness to pay for a better environment.

Of the seven concerns about environmental damage included in this analysis, concern about fertilizers and pesticides is most closely associated with overall willingness to pay.

VIII. ATTITUDES TOWARD ENFORCEMENT

How far should this country go in fighting pollution? As the practical implications of environmental quality standards become clear, that question will have to be answered over and over. In Chapter VI we discussed the public's reactions to the cost of automotive emission controls and to the possibility of factory closings. In this chapter we will discuss the enforcement issue in a broader sense.

Our society has long struggled to define the proper role of its government. In contemporary language we speak of public and private sectors and study the impact of their relative sizes. In times of unusual economic disequilibrium we speak of mandatory controls versus voluntary compliance. In fact, every new major social problem renews the debate about the merits of coercion as an instrument of change.

Where do people stand today on the issue of enforcement of environmental quality standards? Have people come to grips with the choice between strict and permissive enforcement in pollution abatement?

Questions About Enforcement

The series of three questions about enforcement included in this survey are based on the premise that attitudes are measured best when they are approached in terms of acceptance and rejection of statements representing a broad range of positions on an issue, from one extreme to its opposite. It is a common experience, for example, to identify another person's political views by the positions he rejects. The same is true of attitudes toward child rearing, education, food, religion and so on.

For the purpose of this study, we defined the enforcement issue as a series of choices between forcing people to stop pollution at some cost and personal sacrifice and letting people stop pollution voluntarily at the risk of their health and the quality of their environment.

The question was introduced as follows:

> The question to be answered is this: How far should this country go in fighting pollution? In answering this question, keep in mind that pollution is unhealthy and damages property, recreational opportunities and beautiful things. Also keep in mind that fighting pollution costs money and, in the end, we all have to pay for it in some measure.

The following instructions were given:

> First, read every one of the statements A through G below; there are different ways of answering the question. While you might think of other ways, please just use the statements given below.
>
> Second, place a check mark [✓] in the box next to any statement or statements that you find acceptable.

Third, look at the statement or statements you checked and place a second check outside the box next to the one statement that comes closest to expressing your own position.

The statements read as follows:

A. Force farmers, industry, cities and towns to stop pollution, without exception, regardless of what it costs and of who gets hurt by the cost.

B. Force farmers, industry, cities and towns to stop pollution except when the cost is so high that it hurts a lot of people.

C. Force farmers, cities and towns to stop pollution except when the cost is high enough to hurt a few people.

D. It is hard to decide whether to force farmers, industry, cities and towns to stop pollution or to let them do it voluntarily without any pressure from the government.

E. Let farmers, industry, cities and towns stop pollution voluntarily, without any pressure from the government, except when pollution is bad enough to hurt a few people.

F. Let farmers, industry, cities and towns stop pollution voluntarily, without any pressure from the government, except when pollution is so bad that it hurts a lot of people.

G. Let farmers, industry, cities and towns stop pollution voluntarily, without any pressure from the government, regardless of what may happen to our health or to the environment.

On the second page of this question the following instructions were given:

> The statements on this page are the same ones you read in the preceding page. They are different ways of saying how far this country should go in fighting pollution. Place an "X" in the box next to any statement or statements you find NOT acceptable to you.

The statements on that second page were the same ones listed above.

In spite of the apparent complexity of the question, only 7 percent of the people refused to answer it or failed to follow the instructions.

In order to simplify the data tables, we have labeled the seven positions "strict", "middle ground" and "permissive" and qualified them as "extremely", "moderately" or "mildly" so.

Positions Identified as One's Own

Each position was identified as one's own by some people but the frequencies varied a great deal as shown in Table VIII-1. Position A, we will call it extremely strict enforcement, was identified as their own by 16 percent of the respondents to the survey; position D, we will call it the middle ground position, was identified as their own by 22 percent of the respondents and turned out to be the most popular position; position G, we will call it extremely permissive enforcement, was chosen by 2 percent of the respondents.

TABLE VIII-1

PEOPLE'S OWN POSITION ON ENFORCEMENT

Degree of Enforcement Favored	Total Sample %
A. Extremely strict	16
B. Moderately strict	18
C. Mildly strict	5
D. Middle ground	22
E. Mildly permissive	10
F. Moderately permissive	20
G. Extremely permissive	2
No answer	7

Obviously, there is no popular consensus on the most desirable degree of enforcement in environmental protection. Even the totals on either side of the question fail to produce a majority; we find 39 percent of the people on the side of strict enforcement and 32 percent on the side of permissive enforcement. The fact that the middle-ground position is the most popular immediately suggests that many people have not come to grips with this issue and this helps explain why a majority has not emerged.

Acceptance, Rejection and Noncommitment

It has been said, and the saying is often repeated, that politics is the art of compromise. Compromise, the settling of differences through mutual concessions, is only possible when the parties to it find positions that, though not their own, neither party rejects. When two parties reject all possible positions but their own, compromise is impossible. The same principles apply to after-dinner conversation, commerce and many other activities.

We can also appeal to ordinary experience to realize that if we want to change another person's mind we must first find out where he stands and that, unless we hear the limits of what he will accept, we run the risk of provoking an unbending stance when we suggest a position that person rejects.

It is for these reasons that we asked each respondent to this survey to identify not only the statement that came closest to expressing his own position on enforcement but also to accept, reject or remain noncommittal on every other statement. In this manner, a full view of his attitude on enforcement would emerge.

Let us now look at the frequencies of acceptance, rejection and noncommitment for every one of the seven statements chosen to represent a broad spectrum of alternatives from extremely strict to extremely permissive enforcement. Table VIII-2 shows the percentages so that, for each statement, they add to 100 percent of the sample when reading across the table. Acceptance includes the statement identified as one's own position. People who did not answer this question are excluded from the calculations.

TABLE VIII-2

FREQUENCIES OF ACCEPTANCE, REJECTION AND NONCOMMITMENT FOR EACH DEGREE OF ENFORCEMENT

Degree of Enforcement	Accept %	Reject %	Noncommittal %
A. Extremely strict	26	56	18
B. Moderately strict	36	34	30
C. Mildly strict	16	36	48
D. Middle ground	40	25	35
E. Mildly permissive	24	33	43
F. Moderately permissive	36	32	32
G. Extremely permissive	6	67	27

Clearly, many people have not developed well-defined attitudes toward enforcement of environmental quality standards, at least in the basic sense of choosing between coercion and voluntary compliance. Looking at the positions between the two extremes, in B and F we find as many people sitting on the fence as there are on either side of it; in C and E we find more people sitting on the fence than on either side of it.

This lack of well-defined attitudes suggests a lack of public debate and of personal interaction on the issue, for that is how attitudes are shaped.

Reasons for Rejection

When a person rejects a position, he many want stricter enforcement or more permissive enforcement. In Table VIII-3 the totals who reject each position are broken down into those who want stricter and those who want more permissive enforcement. For example, the 34 percent who reject B (moderately strict enforcement) includes 6 percent who want stricter enforcement (that is, A) and 28 percent who want more permissive enforcement (that is, a degree lower than B). The size of the opposition to each degree of enforcement and the direction in which they lean can be readily seen in Table VIII-3.

TABLE VIII-3

REJECTION FREQUENCIES

	Reject Position		
	Total Who Reject	Want Stricter Enforcement	Want More Permissive Enforcement
	%	%	%
Degree of Enforcement Rejected			
A. Extremely strict	56	-	56
B. Moderately strict	34	6	28
C. Mildly strict	36	13	23
D. Middle ground	25	17	8
E. Mildly permissive	33	27	6
F. Moderately permissive	32	31	1
G. Extremely permissive	67	67	-

Concern About Environmental Damage and Position on Enforcement

So far, we have looked at the data for the whole sample. Do attitudes toward enforcement vary according to other views on environmental issues? We find that concern about environmental damage makes a difference; people who are most concerned are more likely to favor strict enforcement than people who are least concerned about damage to the environment. Table VIII-4 shows the data. The differences by level of concern about environmental damage are striking and a majority of the people who have a high level of concern favor strict enforcement.

TABLE VIII-4

OWN POSITION ON ENFORCEMENT AND
CONCERN ABOUT ENVIRONMENTAL DAMAGE

	Concern About Environmental Damage		
	High	Medium	Low
BASE	(710)	(1337)	(990)
	%	%	%
Degree of Enforcement Favored			
A. Extremely strict	25	16	10
B. Moderately strict	25	19	12
C. Mildly strict	4	6	6
D. Middle ground	20	20	25
E. Mildly permissive	7	9	13
F. Moderately permissive	12	21	23
G. Extremely permissive	2	2	2

Quality Rating of Environment and Position on Enforcement

We would expect that the rating of one's own environment would affect one's own stand on enforcement of environmental quality standards. As shown in Table VIII-5, we find that to be true. The worse the rating of one's own environment, the more strict the level of enforcement

167

favored. About half of the people living in a fair, poor or very poor environment favor strict enforcement.

TABLE VIII-5

OWN POSITION ON ENFORCEMENT AND QUALITY
RATING OF ONE'S ENVIRONMENT

	Environment Rating		
	Fair, Poor, Very Poor	Good	Excellent, Very Good
BASE	(1039)	(1032)	(914)
	%	%	%
Degree of Enforcement Favored			
A. Extremely strict	22	14	13
B. Moderately strict	21	17	16
C. Mildly strict	5	5	6
D. Middle ground	19	23	23
E. Mildly permissive	7	10	13
F. Moderately permissive	18	21	21
G. Extremely permissive	2	2	2

Area Size and Position on Enforcement

The quality of the environment is rated lower in more densely populated areas than in less densely populated ones. Furthermore, we find greater concern about environmental damage in metropolitan areas. Consequently, we would expect people who live in metropolitan areas to favor stricter enforcement than people who live in non-metropolitan areas. Table VIII-6 shows this to be the case and it shows also that the larger the metropolitan area, the higher the percentage who favor strict enforcement.

TABLE VIII-6

OWN POSITION ON ENFORCEMENT AND AREA SIZE

	Metropolitan Area		Non-metro-politan
	1,000,000 and Over	50,000 - 1,000,000	
BASE	(1250)	(991)	(797)
	%	%	%
Degree of Enforcement Favored			
A. Extremely strict	20	16	11
B. Moderately strict	23	19	10
C. Mildly strict	6	4	6
D. Middle ground	20	20	26
E. Mildly permissive	9	9	12
F. Moderately permissive	16	21	24
G. Extremely permissive	2	2	3

Willingness to Pay and Position on Enforcement

Does willingness to pay for a better environment reflect a person's attitude about enforcement of environmental quality standards? As we showed in Chapter VII, the amount people volunteer to pay, overall, for a better environment is strongly related to income; we would expect that many people who feel they cannot afford to pay anything would nevertheless expect strict enforcement. Consequently, willingness to pay would not necessarily reflect attitudes on enforcement. Yet, inasmuch as other factors also affect willingness to pay, that measure should bear some relationship to enforcement attitudes. As shown in table VIII-7, the larger the amount people volunteer to pay, the more likely they are to favor strict enforcement. In fact, the differences are quite pronounced.

TABLE VIII-7

OWN POSITION ON ENFORCEMENT AND
WILLINGNESS TO PAY FOR A BETTER ENVIRONMENT

	Amount Willing to Pay		
	Over $50	$1 - $50	Nothing
BASE	(557)	(719)	(1123)
	%	%	%
Degree of Enforcement Favored			
A. Extremely strict	20	19	16
B. Moderately strict	26	21	15
C. Mildly strict	5	7	5
D. Middle ground	20	19	27
E. Mildly permissive	10	12	11
F. Moderately permissive	18	20	24
G. Extremely permissive	1	3	3

Reaction to Car Price Increases and Position on Enforcement

The severest test of the attitudes about enforcement that can be applied with the data at hand is to compare them with the reactions to hypothetical increases in the price of new cars to meet emission control standards. The question is whether people are consistent or not when reacting to essentially the same problem viewed from two different perspectives, one a matter of principle, the other a question of money. For this purpose, we have chosen the reactions to the $500 increase because it is the most severe test. Do people continue to favor strict enforcement when its price is high?

The data presented in Table VIII-8 shows large differences in attitudes toward enforcement. At one extreme, among people who react positively to a $500 price increase, the percentage who favor extremely strict enforcement is nearly twice as high as among people who react negatively to the $500 increase (26% vs. 14%). The frequency of the next position, moderately strict enforcement, is 1.3 times as high among those who react positively as among those who react negatively. The ratios of positive to negative frequencies, shown in the last column, fall below 1.0 at position C. Briefly, people who react positively to the $500 car price increase are more likely to favor strict enforcement than those who react negatively to that price increase.

The apparent anomalies in these data do not necessarily mean that people are inconsistent in their answers to these two questions. The $500 increase may fall in the category of a "cost so high that it hurts a lot of people" or "a few people", the escape clauses or exceptions to statements B and C; thus positions B and C are not necessarily inconsistent with a negative reaction to the $500 increase. Concerning the 14 percent who favor enforcement "without exception, regardless of what it costs and of who gets hurt", the inconsistency in rejecting the $500 increase is evident; they probably failed to realize that the cost of enforcement could be passed on to them.

TABLE VIII-8

OWN POSITION ON ENFORCEMENT AND REACTION TO A $500 CAR PRICE INCREASE

BASE	Reaction to Price Increase Positive (404)	Reaction to Price Increase Neutral (428)	Reaction to Price Increase Negative (1601)	Positive to Negative Ratio
	%	%	%	
Degree of Enforcement Favored				
A. Extremely strict	26	14	14	1.9
B. Moderately strict	24	21	18	1.3
C. Mildly strict	4	4	6	.7
D. Middle ground	19	24	22	.9
E. Mildly permissive	9	11	10	.9
F. Moderately permissive	15	18	22	.7
G. Extremely permissive	1	2	2	.5

Likelihood of a Pragmatic Reaction to Enforcement

We have found that people are almost evenly divided on the issue of strict versus permissive enforcement in the fight against pollution. We have also found that their position on enforcement can be explained, in part, by their concern about environmental damage, their views on the quality of the environment and the size of the population in the area where they live. We have learned that willingness to pay for a better environment reflects, to some extent, people's position on enforcement.

We have also found that people's positions on the choice between strict and permissive enforcement are quite consistent with their reaction to hypothetical price increases to pay for motor vehicle emission control.

We conclude that people's attitudes toward enforcement in pollution abatement reflect both a preference for voluntary or compulsory compliance and a balancing of abatement costs against health and environmental damage effects of pollution.

Attitudes toward enforcement, in terms of strict and permissive approaches to it, reveal a small latitude of acceptance and rejection of positions other than one's own. We also find a high level of noncommitment.

By contrast, dollar questions about the limits of willingness to pay evoke more definite answers, suggesting that the enforcement issue is approached on a pragmatic rather than doctrinaire basis.

We conclude that as the need to meet the costs of environmental quality standards arises, people need reliable, objective information about costs and about the benefits they can reasonably expect from paying these costs.

Opposition to strict enforcement is most likely to arise in areas where people perceive the standards to be unnecessarily high because they see little degradation of the environment with respect to the particular standard being applied.

Summary

We have examined people's attitudes toward enforcement in pollution abatement by posing a choice between various levels of strict and permissive enforcement. We have found no clear majority on either side of this choice. Only the extreme positions of strict enforcement at all costs and non-enforcement regardless of the consequences are rejected by a majority. Although people lean slightly toward strict enforcement, all the positions between the extremes are rejected by about one-third of the people except the middle ground position which is rejected by only one-fourth of them. These findings suggest that the consequences of varying degrees of enforcement have not been debated enough to stimulate attitude formation among many people.

We find differences in the stand people take and in their commitment to a position when we classify people by their views on the environment. Concern about environmental damage, rating one's environment as less than good and living in a metropolitan area, increase the probability of favoring strict enforcement in pollution abatement. We also find that the more people are willing to pay for a better environment, the stricter the level of enforcement favored.

We find attitudes toward enforcement to be quite consistent with the reaction to hypothetical car price increases to pay for emission control.

While attitudes toward enforcement reflect a complex of factors, we conclude that people are approaching the enforcement issue pragmatically. Faced with the facts, they balance the cost of pollution abatement and its benefits and then take a stand.

In areas where a particular form of environmental degradation is not evident or does not seem serious, the corresponding environmental quality standards are likely to be rejected until the eventual consequences of lower standards become understood.

As the need to meet environmental quality standards arises, people will need reliable, objective information about costs and about the benefits they can reasonably expect from paying these costs.

IX. INCOME, AREA SIZE AND CONCERN ABOUT THE ENVIRONMENT

It is not uncommon to hear statements to the effect that environmental concerns are a preoccupation of well-to-do people; the poor, it is said, must have other things on their minds.

That statement runs counter to the logic suggested by the facts, for the poor rate their environment worse than other people rate theirs and, generally speaking, the worse the environment, the greater the concern about environmental damage. Thus allowing for differences in environmental factors other than pollution, income should not be a determinant of concern about environmental damage.

In the first four chapters we have shown few of the customary comparisons by age, income and other demographic factors. This omission was deliberate, for indiscriminate comparisons of that sort are often misleading. In Chapters VI and VII we considered income together with other factors so that the effect of income would not be overstated. In spite of this, income was found to be most closely associated with willingness to pay for pollution abatement and a better environment in general. It is important that this finding should not be misconstrued.

In this chapter we will look at the effect of income and area size together for reasons that will become clear shortly. In doing this, we will learn whether or not income is related to people's concern about the environment.

Effect of Income Alone

The statement to the effect that the poor are not concerned about the environment is sometimes supported by numbers showing that the proportion of people concerned about the environment or about pollution is larger among higher income groups than lower income groups. Using the summary rating of concern introduced in Chapter III, we have prepared Table IX-1 to illustrate that sort of comparison.

TABLE IX-1

INCOME AND CONCERN ABOUT DAMAGE TO THE ENVIRONMENT

	Annual Household Income		
	Under $5,000	$5,000-$14,999	$15,000 & Over
BASE	(612)	(1451)	(639)
	%	%	%
Level of Concern			
High	20	24	26
Medium	42	44	47
Low	38	32	27

Table IX-1 does show that the frequency of a high level of concern rises with income; from 20 percent among households with incomes under $5,000 to 25 percent among the $15,000 or more bracket. What is missing from that table is some information about where these people live, for it is obvious that some areas have much more serious environmental problems than others.

Effect of Area Size Alone

As shown in Chapter II, people who live in non-metropolitan areas rate the quality of their environment much higher than people who live in metropolitan areas, particularly those with one million people or more. In Chapter III we showed that the level of concern about the items rated on their damage to the environment is higher in metropolitan areas than in non-metropolitan areas. This finding is summarized in Table IX-2 which shows the frequency of high, medium and low concern levels by area size.

TABLE IX-2

CONCERN ABOUT DAMAGE TO THE ENVIRONMENT AND AREA SIZE

	Metropolitan		Non-metropolitan
	1,000,000 & Over	50,000 - 1,000,000	
BASE	(1249)	(990)	(797)
	%	%	%
Level of Concern			
High	32	24	9
Medium	48	48	34
Low	20	28	58

Income and Area Size

It is readily observable that income is not unrelated to area size, a fact that cannot be overlooked when discussing concern about the environment, for income is, on average, highest where pollution problems are most pervasive.

Table IX-3 shows the incidence of various income levels by area size. Notice that the incidence of households with incomes under $5,000 a year is nearly twice as high in non-metropolitan areas as in metropolitan areas with one million or more people.

TABLE IX-3

ANNUAL HOUSEHOLD INCOME AND AREA SIZE

	Metropolitan 1,000,000 & Over	Metropolitan 50,000 - 1,000,000	Non-metropolitan
BASE	(1107)	(897)	(774)
	%	%	%
Household Income			
Under $5,000	17	23	31
$5,000 - $14,999	53	53	56
$15,000 & over	30	24	13

To put it differently, about two out of five households with incomes under $5,000 a year live in non-metropolitan areas where pollution is less serious than in metropolitan areas. By contrast, six out of seven with household incomes $15,000 and over live in metropolitan areas where pollution is generally most serious. Thus the fact that a larger percentage of middle and high income people are more concerned about pollution may be related to where they live rather than to their income. In other words, we have to look at income and area size together before we can say whether concern about pollution is related to income or not.

Concern About the Environment Related to Income and Area Size

In order to avoid confusing the effect of where people live with the effect of household income on concern about the environment, people have to be classified by these two factors at the same time. This is done in Table IX-4.

The upper part of Table IX-4 shows the percentages of people with a high level of concern about the environment. It shows these percentages for the total sample, by area size, by household income and by both.

The lower part of Table IX-4 shows the differences between the sample average and each of the three income levels, each of the three area size levels and each of the nine combinations of income and area size.

It is readily apparent that area size has a much greater effect on concern than income does; in fact, the effect of income is so small that it would practically disappear if the distribution of households by area size were the same at each income level as it is nationally.

TABLE IX-4

INCIDENCE OF HIGH LEVEL OF CONCERN ABOUT ENENVIRONMENTAL DAMAGE RELATED TO INCOME AND AREA SIZE

	Total Sample	Metropolitan 1,000,000 & Over	Metropolitan 50,000 - 1,000,000	Non-metropolitan
	%	%	%	%
Household Income				
Total sample	23	32	24	9
Under $5,000	20	33	22	6
$5,000 - $14,999	24	32	25	9
$15,000 & over	26	33	23	9
% Points Above or Below Average				
Total sample		+ 9	+ 1	-14
Under $5,000	- 3	+10	- 1	-17
$5,000 - $14,999	+ 1	+ 9	+ 2	-14
$15,000 & over	+ 3	+10	0	-14

In metropolitan areas with one million or more people, one-third of them express a high level of concern about environmental damage regardless of income. In metropolitan areas with fewer than one million people, about one-fourth of the people express a high level of concern and the differences between income levels are negligible. In non-metropolitan areas, only one-tenth of the people express a high level of concern about environmental damage; among those with incomes under $5,000 the proportion is smaller but the difference is barely significant statistically.

Summary

It is sometimes said that poor people are not concerned about the environment. The evidence used to support that statement is usually incomplete. Taking account of both income and area size, we find that income is not associated with concern about the environment. While it is true that fewer of the lower income people are concerned about damage to the environment, this is because a good number of them have less reason for concern; two out of five people with a household income under $5,000 live in areas where pollution is less of a problem than in metropolitan areas where most of the higher income people live. The remaining three out of five are just as concerned as their well-to-do neighbors. Once people are classified by the size of the area they live in, it becomes apparent that differences in concern are a function of area size: where pollution is a problem, it concerns both rich and poor alike.

Appendix A

SAMPLING AND WEIGHTING PROCEDURES

Description of Probability Sample

One of the requirements for this study was that a minimum of 200 interviews be conducted in each of the ten Federal regions. If the interviews were conducted proportional to the population in each Federal region, four regions would have fewer than 200 interviews, as illustrated in the table below:

Federal Region #	Continental U.S. Population %	Proportional Distribution of 3,000 Interviews #
1	5.9	177
2	12.5	375
3	11.5	345
4	15.9	477
5	21.7	651
6	10.1	303
7	5.5	165
8	2.8	84
9	11.0	330
10	3.1	93
	100.0%	3,000

Therefore, the sample was selected disproportionately to population in each Federal region. This was achieved by utilizing a National Probability Sample consisting of 100 primary sampling units (PSU's) and 400 clusters within these 100 PSU's (which were drawn based on the nine Census regions) and adjusting the number and distribution of clusters to yield the requirement of at least 200 interviews in each Federal region.

The following is a description of the 100 PSU/400 cluster National Probability Sample, after which the cluster adjustment will be described.

The National probability Sample is a multi-stage probability sample of the Continental U.S., consisting of 100 PSU's and 400 clusters. The 1971 Sales Management definition of metropolitan areas and the 1970 population statistics were used to select the interviewing areas. The Sales Management definition of metropolitan areas is:

> "A group of contiguous counties featuring at least one central city of 50,000 inhabitants or more, or 'twin cities' with a combined population of 50,000. In addition to the county containing such a city or cities, contiguous counties qualify as component parts of a Standard Metropolitan Statistical Area if they are essentially metropolitan in character, are economically and socially fused with the 'hub' or central city."

The specific interviewing areas were selected in two stages, as described below:

Stage I - Selection of PSU's

In the selection of the 100 PSU's, the 34 largest metropolitan areas (all having populations over one million) were approximately equal to or larger than the average stratum size and thus, automatically fell into the sample. (These PSU's are referred to as self-weighting PSU's.)

The remaining 264 metropolitan areas (as defined by Sales Management) were stratified on the basis of geography (nine Census regions) and size of metropolitan area. These metropolitan areas were arrayed by size within each Census region. (The odd numbered regions were arrayed from largest to smallest and the even numbered regions were arrayed in reverse order.)

The total population of the 264 metropolitan areas was divided by 35 to yield the sampling interval which defined the 35 strata. The interval numbers fell within a metropolitan area; the area was assigned to the strata in which the larger part of its population fell. (Thus, the strata size varied slightly around the average of approximately one million.) Within each stratum, one PSU (metropolitan area) was randomly selected, using random number tables, with probability proportionate to size (PPS).

The 3,000 odd non-metropolitan counties were stratified on the basis of geography (nine Census regions) and size of the largest central place (city, town or village) within the county. The counties were arrayed within each Census region, similarly to the metropolitan areas (from largest to smallest in the odd number regions and in reverse order in the even numbered regions). Thirty-one equal sized strata were defined from the array.

It was predesignated that each non-metropolitan PSU include a minimum population of 8,000. Counties with population under 8,000 were grouped with a neighboring county or counties within the stratum in forming the PSU's. Within each non-metropolitan stratum, one PSU was randomly selected, using random number tables with probability proportionate to size.

The total number of clusters assigned by strata is proportionate to the population of the Continental U.S., as illustrated by the following table:

	Number of PSU's	Number of Clusters		Continental U.S. Population
	#	#	%	%
Self-weighting metropolitan areas	34	161	40	41
Other metropolitan areas	35	131	33	33
Non-metropolitan areas	31	108	27	26
	100	400	100%	100%

Stage II - Selection of Clusters

The number of clusters assigned to each PSU is proportionate to the population of its stratum. The selected PSU's population was divided by the number of clusters assigned to that PSU to determine the sampling interval. All clusters were selected using the random systematic sampling technique.

The Census "listing of places by county" was used in determining in which places the clusters fell. If the place selected was under 1,200 in size, it was automatically grouped with the preceding place (or places). Then the Census "listing of ED's" (enumeration districts) was used to select the particular ED within the place. Where the ED listing indicated to use block statistics books, these books were used to select the specific block or blocks which constitute the clusters. If the selected block contained fewer than 30 household units, the succeeding block (or blocks) were added to form the cluster. The blocks were selected using random number tables. For all other places, ED maps were used. The selected ED's were then segmented into clusters of 30 household units using geographical data on the maps (streets, rivers, and other natural boundaries). The segment used was selected using random number tables.

For each cluster, interviewers were given a random start number, going in a clockwise direction starting from the northwest corner.

Since the study requirements included a minimum of 200 interviews in each Federal region, it was necessary at this point to adjust the Federal region cluster allocation. The final sample consisted of 102 PSU's and 430 clusters. The original and final allocations are shown in the table below:

Federal Region #	Continental U.S. Population	Original Sample Allocation		Final Sample Allocation
	%	%	#	#
1	5.9	6.0	24	29
2	12.5	13.0	52	48
3	11.5	10.5	42	40
4	15.9	16.8	67	58
5	21.7	22.3	89	87
6	10.1	10.0	40	40
7	5.5	4.2	17	29
8	2.8	2.0	8	29
9	11.0	10.0	40	40
10	3.1	5.2	21	30
	100.0%	100.0%	400	430

Stage III - Selection of Individuals

Within every cluster, interviewers started contacting households at the predesignated start point (nth household from the northwest corner going in a clockwise direction) and continued contacting successive households until seven interviews were completed.

Within each household, all members 18 years and older were determined. Those who were at home at the time of the interviewer's call were then listed in a specific sequence -- males first from youngest to oldest, then females, from youngest to oldest.

Each questionnaire had a predesignated selection procedure of the specific person to be interviewed. Since males are at home less frequently than females, a greater probability of selection was given to the higher lines in order to better represent males in the sample.

The following is an illustration of the instructions used to select the specific person in the household to be interviewed:

INSTRUCTION: IN RESPONDENT SELECTION BOX BELOW, LIST THE POSITION IN HOUSEHOLD OF EACH PERSON "AT HOME" STARTING WITH MALES FROM YOUNGEST TO OLDEST, THEN FEMALES FROM YOUNGEST TO OLDEST.

RESPONDENT SELECTION BOX

POSITION IN HOUSEHOLD OF PERSONS AT HOME	

Red "X's" Appeared Here

INSTRUCTION: ASK TO INTERVIEW PERSON IN RESPONDENT SELECTION BOX WHO IS LOWEST ON THE LIST AND HAS A RED "X" ON HIS/HER LINE. DO NOT SUBSTITUTE.

Weighing Procedures

Since the sample allocation was disproportionate to the population, it was necessary to statistically weight the sample so the data would be representative of the total Continental U.S. Each cluster was assigned a statistical weight so that it would be represented as it would be in a proportionate sample. The following table illustrates the Census region distribution of the actual and statistically weighted cluster.

	Continental U.S. Population	Cluster Allocation		
		Actual # of Clusters	Weighted Sample	
	%	#	#	%
Census Region				
New England	5.8	29	25.0	5.3
Middle Atlantic	18.3	66	79.2	18.4
East North Central	19.8	75	84.7	18.7
West North Central	8.1	47	34.9	8.1
South Atlantic	15.3	57	65.7	15.3
East South Central	6.3	23	27.0	6.3
West South Central	9.6	40	40.9	8.5
Mountain	4.2	32	18.3	4.3
Pacific	12.6	61	54.5	12.6
	100.0%	430	430.2	100.0%

The sample was then compared to population statistics on sex and age. Since there were differences in the sample distributions compared to the total population, the sample was statistically weighted for sex and age so the survey data would be representative of the country on these characteristics.

	1970 Population	Sample	Weighted Sample Data
	%	%	%
Sex			
Male	47.5	38.6	47.2
Female	52.5	61.4	52.8
Age			
18 - 24	17.7	14.7	17.4
25 - 34	18.7	22.5	19.3
35 - 44	17.3	17.8	16.6
45 - 54	17.4	16.7	17.9
55 - 64	13.9	14.1	13.9
65 and over	15.0	14.2	14.9

Appendix B

NOTES ON MULTIVARIATE ANALYSIS

This Appendix provides a fuller description of the analysis presented in Chapter VII. The Multiple Classification Analysis output is included.

The MCA technique can be considered the equivalent of multiple regression analysis using dummy variables but it is a far more convenient tool for survey data analysis.

Three advantages of MCA over other regression techniques are worth mentioning: MCA deals with nominal predictors widely used in survey questionnaires; it handles missing data (no opinion, no answer) by treating it as another predictor category; and it handles a wide range of relationships between variables avoiding the need to search for functions that best describe these relationships. The key restriction is that the model describing the multiple relationships be additive.

The MCA "coefficients" are deviations from the grand mean adjusted for the effects of other predictors. They are computed for each predictor category. Thus the sum of the grand mean and the coefficient equals the adjusted mean for the category.

Of the statistics computed, the Eta correlation ratio has been identified earlier in the report; it measures the effect of the predictor alone, that is without adjustment for other predictors. The Beta ratio refers to the effect of the predictor together with others, that is when all other predictors are "held constant" as if they were distributed within each category as they are for the total sample. The output also includes R, a multiple correlation coefficient which is adjusted for degrees of freedom.

Correlation coefficients obtained from opinion survey data are usually small but this should not be a deterrant to exploring associations between variables. Our intent is not to establish causality but to proceed heuristically in the hope of discovering new information that can help the users of this study.

A few comments about the selection of data are in order at this point. It is most improbable that all of the questions asked can be equally useful in the analysis and some need not be used together because they overlap a great deal. Income and occupation and concern about automobile and truck exhaust are examples of overlapping pairs. Besides, highly overlapping variables produce uncertain results. It is also necessary to limit the number of predictors.

As a first step toward the selection of variables, we obtained correlation ratios (Eta) between willingness to pay and seventy-seven measures of opinion and background factors included in the questionnaire. Thirty-two variables were then selected for analysis of the data structure and of possible interactions between predictors. Finally, the list of predictors was narrowed down to ten for the Multiple Classification Analysis presented here. Predictors were selected on judgement as well as statistical criteria. For example, auto exhaust damage and truck, bus and airplaine damage are nearly equally correlated with willingness to pay, but they overlap considerably. Because of their overlap only one should be used. Auto exhaust was selected because it seemed more reliable as a predictor.

It was also necessary to be selective with the observations used. The distribution of amounts people volunteered is so skewed that it would certainly cause trouble in the multivariate analysis. To begin with, the incidence of zeroes is very high and it was desirable to lower it. We found, for example, that people in households with an income under $3,000 volunteered to pay nothing; it seemed reasonable to exclude them from this multivariate analysis, for these people will not be able to pay much anyway. Other zeroes were excluded on a random basis. Values in excess of $964 were also excluded; that cut-off point was selected because it is at the three-sigma level, the maximum recommended range for the analytical program used here. Frequency distributions of the observations selected for multivariate analysis were then compared to the total sample distributions on all predictor variables as a safety check against the possibility of distortions; the distributions were found to be quite similar. As mentioned earlier, in the presentation of results we use percentage deviations of the dependent variable from the grand mean. In the computer analysis we used the dollar amount given by the respondent; the grand mean of that subsample was, of course, higher than that of the whole sample.

The following tables, numbered VII-1 to VII-10 contain the data presented in chart form in Chapter VII. Computer class codes are shown to the left of the class description.

TABLE VII-1

EFFECT OF INCOME ON WILLINGNESS TO PAY FOR A BETTER ENVIRONMENT

Code	Household Income	Frequency	Deviation from Average Willingness to Pay Unadjusted	Adjusted
0	Refused, don't know	8.1%	-22.0%	-21.4%
2	\$3,000 - \$4,999	7.8%	-25.4%	-16.8%
3	\$5,000 - \$6,999	11.6%	-31.6%	-21.6%
4	\$7,000 - \$9,999	18.0%	- 7.8%	- 5.0%
5	\$10,000 - \$14,999	28.1%	- 4.6%	- 6.3%
6	\$15,000 - \$19,999	12.6%	+ 7.2%	+ 1.6%
7	\$20,000 and over	13.7%	+67.5%	+58.5%

Eta = .218 Beta = .182

115

TABLE VII-2

EFFECT OF FERTILIZER, PESTICIDE DAMAGE RATING ON WILLINGNESS TO PAY FOR A BETTER ENVIRONMENT

Code	Fertilizer, Insecticide Damage	Frequency	Deviation from Average Willingness to Pay Unadjusted	Deviation from Average Willingness to Pay Adjusted
2	Hardly any, none	17.0%	-27.2%	-26.3%
3	A little	16.7%	-12.1%	-16.3%
1	Not sure	16.2%	- 5.5%	+ 3.4%
4	Some, but not a lot	26.7%	+10.9%	+ 5.9%
5	A lot	23.5%	+19.6%	+21.6%

Eta = .124 Beta = .125

NOTE: The placement of the class "not sure" is arbitrary. We have placed it in the middle position in order to keep the scales uniform and thus make it easier to read the charts. Unfortunately, this may create wrong impressions about the shape of regression lines suggested by the charts. It must be kept in mind that the opinion predictors used here are not continuous variables; they are verbal scales with subjective intervals.

TABLE VII-3

EFFECT OF RADIATION DAMAGE RATING ON WILLINGNESS TO PAY FOR A BETTER ENVIRONMENT

			Deviation from Average Willingness to Pay	
Code	Radiation Damage	Frequency	Unadjusted	Adjusted
2	Hardly any, none	38.3%	+ 7.4%	+13.4%
3	A little	8.4%	+ 1.6%	+ 1.0%
1	Not sure	29.7%	-18.0%	-18.6%
4	Some, but not a lot	8.5%	+29.8%	+18.1%
5	A lot	15.1%	- 1.0%	- 8.2%

Eta = .103 Beta = .108

NOTE: This table and Chart VII-3 illustrate the advantages of using Pearson's correlation ratio (Eta) with class variables. First, the damage rating scale is non-continuous and the placement of "not sure" is uncertain. Second, since deviations are computed from class means, no assumptions about linearity are needed.

TABLE VII-4

EFFECT OF EPA AWARENESS LEVEL ON WILLINGNESS TO PAY FOR A BETTER ENVIRONMENT

Code	Awareness of EPA	Frequency	Deviation from Average Willingness to Pay	
			Unadjusted	Adjusted
0	Unaided: Know of no Agency Aided: Not heard of EPA	34.5%	-26.0%	-17.0%
1	Unaided: Know of an Agency Aided: Not heard of EPA	22.2%	+ .1%	+ 1.8%
2	Unaided: Know of no Agency Aided: Heard of EPA	32.2%	+10.5%	+ 7.1%
3	Unaided: Know of an Agency Unaided: Name EPA correctly	11.1%	+50.2%	+28.9%

Eta = .175 Beta = .108

TABLE VII-5

EFFECT OF SOLID WASTE DAMAGE RATING ON WILLINGNESS TO PAY FOR A BETTER ENVIRONMENT

			Deviation from Average Willingness to Pay	
		Frequency	Unadjusted	Adjusted
Code	Solid Waste Damage			
2	Hardly any, none	16.6%	+ 3.0%	+20.0%
3	A little	13.2%	+ 2.3%	+ 8.5%
1	Not sure	5.0%	-14.5%	-18.4%
4	Some, but not a lot	28.3%	+ 4.7%	+ .2%
5	A lot	37.0%	- 4.0%	- 9.7%

Eta = .038 Beta = .084

TABLE VII-6

EFFECT OF AGE ON WILLINGNESS TO PAY FOR A BETTER ENVIRONMENT

Code	Age	Frequency	Deviation from Average Willingness to Pay	
			Unadjusted	Adjusted
1	18 - 24	21.5%	+ 1.2%	+ 1.6%
2	25 - 29	15.9%	+17.9%	+17.9%
3	30 - 34	13.0%	+ .7%	- 2.1%
4	35 - 44	17.3%	- .8%	- 2.8%
5	45 - 54	15.2%	-12.2%	-13.0%
6	55 - 64	10.4%	+11.0%	+12.5%
7	65 & older	6.5%	-39.4%	-23.6%
			Eta = .102	Beta = .084

TABLE VII-7

EFFECT OF STRIP MINING DAMAGE RATING ON WILLINGNESS TO PAY FOR A BETTER ENVIRONMENT

			Deviation from Average Willingness to Pay	
		Frequency	Unadjusted	Adjusted
Code	Strip Mining Damage			
2	Hardly any, none	30.6%	- 8.8%	- .9%
3	A little	6.0%	-22.2%	-15.2%
1	Not sure	28.7%	-15.6%	- 4.0%
4	Some, but not a lot	8.1%	- 1.0%	- 9.5%
5	A lot	26.7%	+29.0%	+11.7%

Eta = .116 Beta = .059

TABLE VII-8

EFFECT OF FACTORY EFFLUENT DAMAGE RATING ON WILLINGNESS TO PAY FOR A BETTER ENVIRONMENT

			Deviation from Average Willingness to Pay	
Code	Factory Effluent Damage	Frequency	Unadjusted	Adjusted
2	Hardly any, none	17.3%	-18.0%	-16.3%
3	A little	8.4%	-17.6%	- 2.6%
1	Not sure	11.7%	- 2.5%	+ 9.0%
4	Some, but not a lot	15.1%	- 1.0%	+ 2.3%
5	A lot	47.6%	+10.6%	+ 3.4%
			Eta = .087	Beta = .059

TABLE VII-9

EFFECT OF GROUND LEVEL NOISE DAMAGE RATING ON WILLINGNESS TO PAY FOR A BETTER ENVIRONMENT

Code	Ground Level Noise Damage	Frequency	Deviation from Average Willingness to Pay	
			Unadjusted	Adjusted
2	Hardly any, none	22.3%	- 6.4%	- 1.2%
3	A little	17.9%	- 5.6%	- 7.8%
1	Not sure	3.5%	-15.0%	+ 5.9%
4	Some, but not a lot	25.8%	+ 9.6%	- .9%
5	A lot	30.5%	+ 8.9%	+ 5.6%

Eta = .051 Beta = .035

TABLE VII-10

EFFECT OF AUTO EXHAUST DAMAGE RATING ON WILLINGNESS TO PAY FOR A BETTER ENVIRONMENT

			Deviation from Average Willingness to Pay	
		Frequency	Unadjusted	Adjusted
Code	Auto Exhaust Damage			
2	Hardly any, none	8.2%	-13.7%	- 1.0%
3	A little	10.5%	-16.8%	- 7.0%
1	Not sure	2.4%	- 4.2%	-10.5%
4	Some, but not a lot	25.9%	- 4.8%	- 1.0%
5	A lot	53.0%	+ 8.0%	+ 2.5%

Eta = .069 Beta = .025

182a

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COEFFICIENTS CONVERGED TEST TYPE  2 ITERATION  7


 DEPENDENT VARIABLE (Y)  =   81:  VAR 81 WILLING TO PAY


 M E A N                   = 0.89744095E 02

 SUM    OF     Y           = 0.10661600E 06
 SUM OF Y SQUARE           = 0.26755856E 08
 STANDARD  DEVIATION       = 0.12033264E 03
 TOTAL  SUM  OF  SQUARES   = 0.17187696E 08
 EXPLAINED SUM OF SQUARE   = 0.18315980E 07
 RESIDUAL SUM OF SQUARES   = 0.15356098E 08



 PREDICTOR      6:  VAR 6 FERTILIZER

       NO OF  SUM  OF   PER     C L A S S  DEVIATION FROM
CLASS  CASES  WEIGHTS  CENTS      M E A N     GRAND MEAN     COEFFICIENT     ADJUSTED MEAN

   1     192      192   16.2  0.84844E 02   -0.49003E 01   0.30557E 01      0.92800E 02
   2     202      202   17.0  0.65307E 02   -0.24437E 02  -0.23587E 02      0.66157E 02
   3     198      198   16.7  0.78884E 02   -0.10860E 02  -0.14654E 02      0.75090E 02
   4     317      317   26.7  0.99549E 02    0.98048E 01   0.52578E 01      0.95002E 02
   5     279      279   23.5  0.10738E 03    0.17632E 02   0.19399E 02      0.10914E 03

 ETA-SQUARE =  0.15464973E-01      BETA-SQUARE =  0.15735213E-01
        ETA =  0.12435824E 00             BETA =  0.12544006E 00

 UNADJUSTED DEVIATION SS =  0.26580731E 06
 ADJUSTED   DEVIATION SS =  0.27045206E 06



 PREDICTOR      7:  VAR 7 LIQUID WASTE

       NO OF  SUM  OF   PER     C L A S S  DEVIATION FROM
CLASS  CASES  WEIGHTS  CENTS      M E A N     GRAND MEAN     COEFFICIENT     ADJUSTED MEAN

   1     139      139   11.7  0.87489E 02   -0.22549E 01   0.81071E 01      0.97851E 02
   2     205      205   17.3  0.73610E 02   -0.16134E 02  -0.14604E 02      0.75140E 02
   3     100      100    8.4  0.73950E 02   -0.15794E 02  -0.23262E 01      0.87418E 02
   4     179      179   15.1  0.88883E 02   -0.86142E 00   0.20599E 01      0.91804E 02
   5     565      565   47.6  0.99221E 02    0.94771E 01   0.30634E 01      0.92807E 02

 ETA-SQUARE =  0.75574964E-02      BETA-SQUARE =  0.34593849E-02
        ETA =  0.86933851E-01             BETA =  0.58816537E-01

 UNADJUSTED DEVIATION SS =  0.12989600E 06
 ADJUSTED   DEVIATION SS =  0.59458859E 05



 PREDICTOR      8:  VAR8 SOLID WASTE
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        NO OF   SUM  OF   PER     C L A S S  DEVIATION FROM
CLASS   CASES   WEIGHTS  CENTS      M E A N     GRAND MEAN     COEFFICIENT     ADJUSTED MEAN

  1       59        59     5.0  0.76763E 02  -0.12981E 02  -0.16541E 02      0.73203E 02
  2      197       197    16.6  0.91985E 02   0.22407E 01   0.17910E 02      0.10765E 03
  3      157       157    13.2  0.91796E 02   0.20521E 01   0.76008E 01      0.97345E 02
  4      336       336    28.3  0.94423E 02   0.46785E 01   0.21104E 00      0.89955E 02
  5      439       439    37.0  0.86169E 02  -0.35755E 01  -0.86939E 01      0.81050E 02

ETA-SQUARE =  0.14289012E-02     BETA-SQUARE =  0.70746876E-02
       ETA =  0.37600811E-01            BETA =  0.84111154E-01

UNADJUSTED DEVIATION SS =  0.24559523E 05
ADJUSTED   DEVIATION SS =  0.12159763E 06


PREDICTOR     12:  VAR 12 AUTO EXHAUST

        NO OF   SUM  OF   PER     C L A S S  DEVIATION FROM
CLASS   CASES   WEIGHTS  CENTS      M E A N     GRAND MEAN     COEFFICIENT     ADJUSTED MEAN

  1       28        28     2.4  0.85929E 02  -0.38155E 01  -0.94102E 01      0.80334E 02
  2       97        97     8.2  0.77412E 02  -0.12332E 02  -0.85802E 00      0.88886E 02
  3      125       125    10.5  0.74688E 02  -0.15056E 02  -0.63179E 01      0.83426E 02
  4      308       308    25.9  0.85406E 02  -0.43383E 01  -0.92433E 00      0.88820E 02
  5      630       630    53.0  0.96921E 02   0.71765E 01   0.22559E 01      0.92000E 02

ETA-SQUARE =  0.47555864E-02     BETA-SQUARE =  0.64054225E-03
       ETA =  0.68960786E-01            BETA =  0.25308937E-01

UNADJUSTED DEVIATION SS =  0.81737625E 05
ADJUSTED   DEVIATION SS =  0.11009449E 05


PREDICTOR     15:  VAR 15 RADIATION

        NO OF   SUM  OF   PER     C L A S S  DEVIATION FROM
CLASS   CASES   WEIGHTS  CENTS      M E A N     GRAND MEAN     COEFFICIENT     ADJUSTED MEAN

  1      353       353    29.7  0.73572E 02  -0.16172E 02  -0.16730E 02      0.73015E 02
  2      455       455    38.3  0.96396E 02   0.66515E 01   0.12068E 02      0.10181E 03
  3      100       100     8.4  0.91150E 02   0.14059E 01   0.88260E 00      0.90627E 02
  4      101       101     8.5  0.11649E 03   0.26741E 02   0.16266E 02      0.10601E 03
  5      179       179    15.1  0.88855E 02  -0.88936E 00  -0.73545E 01      0.82390E 02

ETA-SQUARE =  0.10764237E-01     BETA-SQUARE =  0.11726134E-01
       ETA =  0.10375082E 00            BETA =  0.10828727E 00

UNADJUSTED DEVIATION SS =  0.18501250E 06
ADJUSTED   DEVIATION SS =  0.20154525E 06


PREDICTOR     19:  VAR 19 STRIP MINING

        NO OF   SUM  OF   PER     C L A S S  DEVIATION FROM
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182B

182C

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CLASS  CASES  WEIGHTS  CENTS      M E A N       GRAND MEAN     COEFFICIENT     ADJUSTED MEAN

  1     341      341    28,7   0,75780E 02   -0,13964E 02   -0,36334E 01      0,86111E 02
  2     363      363    30,6   0,88953E 02   -0,79094E 00   -0,83683E 00      0,88907E 02
  3      71       71     6,0   0,69817E 02   -0,19927E 02   -0,13654E 02      0,76090E 02
  4      96       96     8,1   0,88813E 02   -0,93159E 00   -0,85454E 01      0,81199E 02
  5     317      317    26,7   0,11042E 03    0,20672E 02    0,10512E 02      0,10026E 03

 ETA-SQUARE =  0,13408724E-01      BETA-SQUARE =  0,34929167E-02
        ETA =  0,11579603E 00             BETA =  0,59100904E-01

 UNADJUSTED DEVIATION SS =  0,23046513E 06
 ADJUSTED   DEVIATION SS =  0,60035191E 05


 PREDICTOR     22:  VAR 22 TRAFFIC NOISE

        NO OF  SUM  OF    PER     C L A S S  DEVIATION FROM
CLASS  CASES  WEIGHTS  CENTS      M E A N     GRAND MEAN     COEFFICIENT     ADJUSTED MEAN

  1      41       41     3,5   0,76293E 02   -0,13451E 02    0,53326E 01      0,95077E 02
  2     265      265    22,3   0,83966E 02   -0,57781E 01   -0,10597E 01      0,88684E 02
  3     213      213    17,9   0,84704E 02   -0,50399E 01   -0,70505E 01      0,82694E 02
  4     307      307    25,8   0,90603E 02    0,85851E 00   -0,81076E 00      0,88933E 02
  5     362      362    30,5   0,97735E 02    0,79907E 01    0,50081E 01      0,94752E 02

 ETA-SQUARE =  0,26191163E-02      BETA-SQUARE =  0,12411510E-02
        ETA =  0,51177304E-01             BETA =  0,35229973E-01

 UNADJUSTED DEVIATION SS =  0,45016578E 05
 ADJUSTED   DEVIATION SS =  0,21332527E 05


 PREDICTOR     47:  VAR 47 E,P,A, KNOWLEDGE

        NO OF  SUM  OF    PER     C L A S S  DEVIATION FROM
CLASS  CASES  WEIGHTS  CENTS      M E A N     GRAND MEAN     COEFFICIENT     ADJUSTED MEAN

  0     410      410    34,5   0,66368E 02   -0,23376E 02   -0,15299E 02      0,74445E 02
  1     264      264    22,2   0,89833E 02    0,89233E-01    0,15872E 01      0,91331E 02
  2     382      382    32,2   0,99207E 02    0,94627E 01    0,63538E 01      0,96098E 02
  3     132      132    11,1   0,13479E 03    0,45044E 02    0,25960E 02      0,11570E 03

 ETA-SQUARE =  0,30606963E-01      BETA-SQUARE =  0,11695169E-01
        ETA =  0,17494845E 00             BETA =  0,10814422E 00

 UNADJUSTED DEVIATION SS =  0,52606319E 06
 ADJUSTED   DEVIATION SS =  0,20101306E 06


 PREDICTOR     57:  VAR 57 AGE

        NO OF  SUM  OF    PER     C L A S S  DEVIATION FROM
CLASS  CASES  WEIGHTS  CENTS      M E A N     GRAND MEAN     COEFFICIENT     ADJUSTED MEAN
```

```
  1      256        256   21,5  0,90781E 02     0,10372E 01   0,14044E 01        0,91149E 02
  2      189        189   15,9  0,10564E 03     0,16097E 02   0,16031E 02        0,10578E 03
  3      155        155   13,0  0,90394E 02     0,64944E 00  -0,18902E 01        0,87854E 02
  4      206        206   17,3  0,90432E 02     0,68794E 00  -0,25402E 01        0,87204E 02
  5      181        181   15,2  0,78773E 02    -0,10971E 02  -0,11690E 02        0,78054E 02
  6      124        124   10,4  0,99073E 02     0,93285E 01   0,94520E 01        0,99196E 02
  7       77         77    6,5  0,54403E 02    -0,35342E 02  -0,21162E 02        0,68583E 02

 ETA-SQUARE =  0,10365609E-01      BETA-SQUARE =  0,70548840E-02
        ETA =  0,10181165E 00             BETA =  0,83993375E-01

 UNADJUSTED DEVIATION SS =  0,17816100E 06
 ADJUSTED   DEVIATION SS =  0,12125725E 06



 PREDICTOR    60:  VAR 60 INCOME

       NO OF  SUM  OF   PER    C L A S S  DEVIATION FROM
CLASS  CASES  WEIGHTS  CENTS    M E A N     GRAND MEAN     COEFFICIENT     ADJUSTED MEAN

  0       96        96    8,1  0,69958E 02   -0,19786E 02  -0,19191E 02      0,70553E 02
  2       93        93    7,8  0,66957E 02   -0,22787E 02  -0,15037E 02      0,74707E 02
  3      138       138   11,6  0,61355E 02   -0,28339E 02  -0,19385E 02      0,70360E 02
  4      214       214   18,0  0,82692E 02   -0,70525E 01  -0,45283E 01      0,85216E 02
  5      334       334   28,1  0,85587E 02   -0,41573E 01  -0,56232E 01      0,84121E 02
  6      150       150   12,6  0,96167E 02    0,64226E 01   0,13911E 01      0,91135E 02
  7      163       163   13,7  0,15030E 03    0,60557E 02   0,52481E 02      0,14223E 03

 ETA-SQUARE =  0,47559079E-01      BETA-SQUARE =  0,33304550E-01
        ETA =  0,21808046E 00             BETA =  0,18249536E 00

 UNADJUSTED DEVIATION SS =  0,81743100E 06
 ADJUSTED   DEVIATION SS =  0,57242850E 06

R-SQUARED(UNADJUSTED) = PROPORTION OF VARIATION EXPLAINED BY FITTED MODEL = 0,107

ADJUSTMENT FOR DEGREES OF FREEDOM =   1,03759


***MULTIPLE R  (ADJUSTED) = 0,27015   MULTIPLE R-SQUARE(ADJUSTED) = 0,07298

    OUTPUT  COMPLETED,
```

182D

Appendix C

TABLE OF SAMPLING TOLERANCES
(At the 95% Confidence Level)

	Reported Percentages					
	50%	40% or 60%	30% or 70%	20% or 80%	10% or 90%	5% of 95%
Sample Base						
3,000	1.8	1.8	1.6	1.4	1.1	.8
2,500	2.0	1.9	1.8	1.6	1.2	.9
2,000	2.2	2.1	2.0	1.8	1.3	1.0
1,750	2.3	2.3	2.1	1.9	1.4	1.0
1,500	2.5	2.5	2.3	2.0	1.5	1.1
1,250	2.8	2.7	2.5	2.2	1.7	1.2
1,000	3.1	3.0	2.8	2.5	1.9	1.4
900	3.3	3.2	3.0	2.6	2.0	1.4
800	3.5	3.4	3.2	2.8	2.1	1.5
700	3.7	3.6	3.4	3.0	2.2	1.6
600	4.0	3.9	3.7	3.2	2.4	1.7
500	4.4	4.3	4.0	3.5	2.6	1.9
400	4.9	4.8	4.5	3.9	2.9	2.1
300	5.7	5.5	5.2	4.5	3.4	2.5
200	6.9	6.8	6.4	5.5	4.2	3.0
100	9.8	9.6	9.0	7.8	5.9	4.3

How To Read: There are 95 chances in 100 that the universe percentage is in the range of the reported percentage for the sample plus or minus the tolerance percentage appearing in the table. For example, if the reported percentage for a base of 1,000 is 20%, then it can be said that there are 95 chances in 100 that the universe percentage lies between 17.5% and 22.5%.

184

V-267
May 73

J. M. Viladas Division of
de Kadt Marketing and Research, Inc.
12 Havemeyer Place
Greenwich, Conn. 06830

____ ____ ____ ____
1 2 3 4

ENVIRONMENT STUDY

NAME ________________________ TELEPHONE ____________

ADDRESS ________________________ CITY ____________

INTERVIEWER ________________________ DATE ____________

VALIDATED [ ] BY ________________________ CLUSTER # __ __ __ __ __ (5-9)

Hello, I'm ____________ from de Kadt Marketing and Research, and we are conducting a survey of opinions on an issue of public interest.

1. Before starting, I would like to have a list of all the members of your household who are eighteen years or older.
   a. First, please tell me the names of the males 18 years or older living in your household, starting with the youngest male to the oldest. Also, please give me their ages, and their position in the home—whether they are the son, the male head of the house or what. (RECORD POSITION IN HOUSEHOLD AND AGE FOR EACH IN "MALES" COLUMN BELOW.)
   b. Now, please tell me the names of the females, from youngest to oldest. Again, give me their ages, and their position in the home. (LIST IN "FEMALES" COLUMN BELOW.)
   c. I would like to interview one of these members of your household. Which ones are at home now? (CHECK IN "AT HOME" COLUMN BELOW.)

MALES				FEMALES			
Name	Position in Household	Age	At Home	Name	Position in Household	Age	At Home
			(10-11) [ ]				(18-19) [ ]
			(12-13) [ ]				(20-21) [ ]
			(14-15) [ ]				(22-23) [ ]
			(16-17) [ ]				(24-25) [ ]

INSTRUCTION: IN RESPONDENT SELECTION BOX BELOW, LIST THE POSITION IN HOUSEHOLD OF EACH PERSON WITH AN "X" IN "AT HOME" COLUMNS STARTING WITH MALES IN THE ORDER IN WHICH THEY APPEAR ABOVE. DO NOT SKIP ANY LINES IN RESPONDENT SELECTION BOX BELOW.

RESPONDENT SELECTION BOX →

POSITION IN HOUSEHOLD OF PERSONS AT HOME		PUT "X" ON LINE OF PERSON INTERVIEWED
	x	
	x	
	x	

INSTRUCTION: ASK TO INTERVIEW PERSON IN RESPONDENT SELECTION BOX WHO IS LOWEST ON THE LIST AND HAS A RED "X" ON HIS/HER LINE. DO NOT SUBSTITUTE. (IF NEW RESPONDENT, RE-INTRODUCE YOURSELF.)

2-10

2. (HAND RESPONDENT CARD A) Here's a list of issues many people find important. Would you please read the whole list first and then choose *three* issues that, in your opinion, are most important today; (CIRCLE BELOW THREE ISSUES NAMED.)

State of economy	1	26-
Control of air and water pollution	2	
Controlling inflation	3	
Taxes and government spending	4	
Crime	5	
Drugs	6	
Racial relations	7	
Student unrest	8	
Education	9	

3. The word environment is used a great deal nowadays. What does the word environment mean to you?

______________________________ 27-

______________________________ 28-

______________________________ 29-

4a. Some people talk about the *quality* of our environment. Would you say that the environment you live in is (READ LIST AND CIRCLE ANSWER BELOW):

Excellent	6	30-
Very good	5	
Good	4	
Fair	3	
Poor	2	
Very poor	1	

4b. How would you describe your idea of an excellent environment?

______________________________ 31-

______________________________ 32-

______________________________ 33-

4c. How would you describe your idea of a very poor environment?

______________________________ 34-

______________________________ 35-

______________________________ 36-

5. Would you say that during the last twelve months, the environment you live in has been: (READ ENTIRE LIST AND CIRCLE ANSWER BELOW)

Getting better	4	37-
Staying about the same	3	
Getting worse	2	
or Don't you know	1	

6. (HAND RESPONDENT CARD B) I am going to read a list of things people have mentioned as damaging our environment. Using the words on this card, I would like you to tell me how much damage each one causes to the environment in this part of the country in your opinion.

	A Lot	Some but not a lot	Only a little	Hardly any/none	Not Sure	
a. Untreated sewage from cities and towns.	5	4	3	2	1	38-
b. Oil spills from tankers, pipelines, storage tanks, etc.	5	4	3	2	1	39-
c. Fertilizers, insecticides and weed killers washed away from farms and lawns	5	4	3	2	1	40-
d. Untreated liquid wastes from factories	5	4	3	2	1	41-
e. Garbage, trash and other solid waste .	5	4	3	2	1	42-
f. The heating of rivers by atomic power plants	5	4	3	2	1	43-
g. Septic tanks of private homes	5	4	3	2	1	44-
h. Burning of trash at farms, homes, apartments and town incinerators or dumps	5	4	3	2	1	45-
i. Exhaust from private automobiles	5	4	3	2	1	46-
j. Exhaust from trucks, buses and airplanes	5	4	3	2	1	47-
k. Smoke and gases from factories, refineries and electric power plants . . .	5	4	3	2	1	48-
l. Radiation from nuclear facilities	5	4	3	2	1	49-
m. Use of land for housing	5	4	3	2	1	50-
n. Use of land for large office buildings . .	5	4	3	2	1	51-
o. Use of land for factories	5	4	3	2	1	52-
p. Strip mining	5	4	3	2	1	53-
q. Cutting down of trees	5	4	3	2	1	54-
r. Growth of population in this area	5	4	3	2	1	55-
s. Noise from traffic, equipment and machines	5	4	3	2	1	56-
t. Noise from airplanes	5	4	3	2	1	57-

7a. During these last twelve months, have you had an opportunity to do anything for the purpose of improving the quality of your environment?

Yes . . . 1 ⟶ ASK Q7b   No . . . . 2 ⟶ SKIP TO Q8   58-

7b. What did you do?

____ 59-

____ 60-

____

8. To clean up pollution and to improve the quality of our environment will cost money. Some people say they are not willing to pay anything at all. Others say they are willing to pay quite a lot. How much would you be willing to pay a year to improve the quality of your environment?

$ ____________   (61-64)

9. Now I'm going to give you a list of things that could be done with the money people are willing to pay to improve the environment. The question is this: for every $100 dollars collected, how many dollars should be spent on each of the things listed here? You can answer this by yourself. Give as many or as few dollars as you wish to each item listed. It is NOT necessary to give something to each item. You must make sure the total adds up to $100. (HAND THIS PAGE TO RESPONDENT.)

Eliminating air pollution from plants and factories	$ ________	(65-66)	
Treating sewer wastes so that they don't pollute the water	$ ________	(67-68)	
Improved mass transportation	$ ________	(69-70)	
Making sure that atomic power plants are safe	$ ________	(71-72)	
Eliminating excessive noise	$ ________	(73-74)	
Disposing of trash and garbage in a sanitary fashion	$ ________	(75-76)	
Restoring lands affected by strip mining	$ ________	(77-78)	8 1
Making car and truck engines that cause little or no air pollution . .	$ ________	(5-6)	
Finding safer pesticides to kill weeds, bugs, funguses, etc.	$ ________	(7-8)	
TOTAL	$100		

WHEN FINISHED, PLEASE RETURN TO INTERVIEWER.

DO-IT-YOURSELF PAGE ON POLLUTION–PART 1.

10a. The question to be answered is this: How far should this country go in fighting pollution? In answering this question, keep in mind that pollution is unhealthy and damages property, recreational opportunities and beautiful things. Also keep in mind that fighting pollution costs money and, in the end, we all have to pay for it in some measure.

Here is how to answer this question:

First, read every one of the statements A through G below; there are different ways of answering the question. While you might think of other ways, please just use the statements given below.

Second, place a check mark [✓] in the box next to any statement or statements that you find acceptable.

Third, look at the statement or statements you checked and place a second check outside the box next to the one statement that comes closest to expressing your own position.

			(9)	(10)
☐	A.	Force farmers, industry, cities and towns to stop pollution, without exception, regardless of what it costs and of who gets hurt by the cost.	1-	1-
☐	B.	Force farmers, industry, cities and towns to stop pollution except when the cost is so high that it hurts a lot of people.	2-	2-
☐	C.	Force farmers, cities and towns to stop pollution except when the cost is high enough to hurt a few people.	3-	3-
☐	D.	It is hard to decide whether to force farmers, industry, cities and towns to stop pollution or to let them do it voluntarily without any pressure from the government.	4-	4-
☐	E.	Let farmers, industry, cities and towns stop pollution voluntarily, without any pressure from the government, except when pollution is bad enough to hurt a few people.	5-	5-
☐	F.	Let farmers, industry, cities and towns stop pollution voluntarily, without any pressure from the government, except when pollution is so bad that it hurts a lot of people.	6-	6-
☐	G.	Let farmers, industry, cities and towns stop pollution voluntarily, without any pressure from the government, regardless of what may happen to our health or to the environment.	7-	7-

WHEN FINISHED PLEASE TURN THE PAGE

DO-IT-YOURSELF PAGE ON POLLUTION–PART 2.

10b. The statements on this page are the same ones you read in the preceding page. They are different ways of saying how far this country should go in fighting pollution. Place an "X" in the box next to any statement or statements you find NOT acceptable to you.

(11)

[ ] A. Force farmers, industry, cities and towns to stop pollution, without exception, regardless of what it costs and of who gets hurt by the cost. 1-

[ ] B. Force farmers, industry, cities and towns to stop pollution except when the cost is so high that it hurts a lot of people. 2-

[ ] C. Force farmers, cities and towns to stop pollution except when the cost is high enough to hurt a few people. 3-

[ ] D. It is hard to decide whether to force farmers, industry, cities and towns to stop pollution or to let them do it voluntarily without any pressure from the government. 4-

[ ] E. Let farmers, industry, cities and towns stop pollution voluntarily, without any pressure from the government, except when pollution is bad enough to hurt a few people. 5-

[ ] F. Let farmers, industry, cities and towns stop pollution voluntarily, without any pressure from the government, except when pollution is so bad it hurts a lot of people. 6-

[ ] G. Let farmers, industry, cities and towns stop pollution voluntarily, without any pressure from the government, regardless of what may happen to our health or to the environment. 7-

WHEN FINISHED, PLEASE RETURN TO INTERVIEWER

11. (HAND RESPONDENT CARD C) Now I'm going to read a list of things that are said to affect people's health. For each one I read, I'd like you to tell me to what extent you believe people's health is affected by each one of these things. To give your answers, please use the words on this card that come closest to expressing your opinion. To what extent is people's health affected by: (READ LIST AND CIRCLE ANSWER BELOW)

	A Lot	Some	A Little Bit	Not At All	Not Sure	
a. Untreated sewage from cities and towns	5	4	3	2	1	12-
b. Oil spills from tankers, pipelines, storage tanks, etc.	5	4	3	2	1	13-
c. Fertilizers, insecticides and weed killers washed away from farms and lawns	5	4	3	2	1	14-
d. Untreated liquid wastes from factories	5	4	3	2	1	15-
e. Garbage, trash and other solid waste	5	4	3	2	1	16-
f. Septic tanks of private homes	5	4	3	2	1	17-
g. Burning of trash at farms, homes, apartments and town incinerators or dumps	5	4	3	2	1	18-
h. Exhaust from private automobiles . .	5	4	3	2	1	19-
i. Exhaust from trucks, buses and airplanes	5	4	3	2	1	20-
j. Smoke and gases from factories, refineries and electric power plants	5	4	3	2	1	21-
k. Radiation from nuclear facilities . .	5	4	3	2	1	22-
l. Noise from traffic, equipment and machines	5	4	3	2	1	23-
m. Noise from airplanes	5	4	3	2	1	24-

12a. (HAND RESPONDENT CARD D) Here's a card with feelings people have expressed about the fight against air pollution. Would you read it please and tell me which one statement comes closest to expressing how you feel? Just give me the number in front of the one you choose.

1 2 3 4 5 6 7 8 9 25-

12b. How about water pollution. Which one statement comes closest to expressing how you feel.

1 2 3 4 5 6 7 8 9 26-

12c. Which one statement comes closest to expressing how you feel about controlling the use of hazardous chemical pesticides and finding safer ones.

1 2 3 4 5 6 7 8 9 27-

12d. Which one statement comes closest to expressing how you feel about the effort to find better and more sanitary ways of disposing of garbage, trash and other solid wastes?

1 2 3 4 5 6 7 8 9 28-

13a. Do you know whether there is a Federal Agency or Department directly involved in fighting pollution and protecting the environment?

Yes . . . 1 → ASK Q13b No . . . . 2 → SKIP TO Q14a 29-

13b. What is the name of that Agency or Department?

______________________________ 30-

14a. Two years ago, Congress created the United States Environmental Protection Agency. Have you ever heard of that agency before?

Yes . . . 1 → ASK Q14b No . . . . 2 → SKIP TO Q15a 31-

14b How much would you say you know about the Environmental Protection Agency, a great deal, a fair amount, a little, almost nothing or nothing at all?

A great deal 1 32-
A fair amount 2
A little 3
Almost nothing 4
Nothing at all 5

14c. Have you heard anything specific that the Environmental Protection Agency has accomplished?

Yes . . . 1 → ASK Q14d No . . . . 2 → SKIP TO Q15a 33-

14d. What have you heard?

______________________________ 34-

______________________________ 35-

____

15a. Now let's talk about electric power for a minute. How much was your last electric bill? (WRITE AMOUNT IN WHOLE DOLLARS.)

$________________ (36-37)

15b. Was this for 1 month or 2 months?

One month 1 38-
Two months 2
Other (Specify)
______________________________ 3

15c. Now suppose that the only way to stop the electric power plants from polluting is to install expensive equipment, and this equipment made your electric bill go up unless you used less electricity than you use now. How much *more* would you be willing to pay a month to clean up this form of pollution?

$________________ (39-40)

16. Some people say that solid waste is becoming a major environmental problem not only in the handling and disposing of the waste material, but also in terms of resources used. For example more paper requires more trees cut. Many people claim that the best solution to the solid waste problem from the environmental point of view is re-use the waste material. In most cases it costs more to do that than simply to burn or bury it. The average family now spends about $80 a year on solid waste disposal. How much *more* would you be willing to pay per year to have waste material re-used or recycled?

$________________ (41-42)

17. Some people say that a major cause of pollution of our lakes, streams and rivers is the food industry, both producing the food and processing it. Some people think not. Cleaning up this form of pollution may raise the cost of food items as much as $30 a year for the average family. How much *more* than $30 per year would you be willing to pay per year to clean up this form of water pollution?

$________________ (43-44)

18a. Do you know what you are paying for your sewer system now?

Yes . . . 1 → ASK Q18b No . . . . 2 → SKIP TO Q18c 45-
Nothing, have septic tank . . . . 3 → SKIP TO Q19a

18b. How much is it per year?

$________________ (46-48)

18c. Some water pollution comes from incomplete treatment of sewer wastes. Water improvement requires additional treatment which would increase water and sewer bills or local taxes. How much *more* would you be willing to pay per year to provide extra treatment of sewage to clean up this form of water pollution?

$________________ (49-51)

19a. As you may know, automobiles are one of the major sources of air pollution. Would you be willing to pay a higher price for a car and higher operating costs if it helps clean up the air?

Yes . . . 1 → ASK Q19b&c No . . . . 2 → SKIP TO Q20a 52-

19b. With respect to purchasing a car, how much *extra* would you be willing to pay to have the anti-pollution devices added?

$________________ (53-55)

19c. How much *extra* would you be willing to pay in annual operating costs for extra gas and maintenance?

$________________ (56-58)

20a. (HAND RESPONDENT CARD E) Would you please read this statement about new cars carefully. (WAIT FOR RESPONDENT TO FINISH READING CARD E AND THEN HAND RESPONDENT CARD F.) This card has five kinds of answers people give when they learn that the new models beginning with 1975 or 1976 will cost more money. Suppose that these new antipollution devices made the price of every new car go up $150, which statement on this card comes closest to saying how you would feel? (CIRCLE ANSWER BELOW.)

20b. Suppose that these new antipollution devices made the price of every new car go up $300 which statement on this card comes closest to saying what you would feel? (CIRCLE ANSWER BELOW.)

20c. Suppose that these new antipollution devices made the price of every new car go up $500 which statement on this card comes closest to saying what you would feel? (CIRCLE ANSWER BELOW.)

	20a $150	20b $300	20c $500
A. It's a good thing	1 59-	1 60-	1 61-
B. It's OK with me	2	2	2
C. It's hard to say	3	3	3
D. It's a bad thing	4	4	4
E. It's a terrible thing	5	5	5
F. None of these (PROBE AND SPECIFY THEN GO TO Q21a) . ________________		6	6

21a. Have you heard of any cases in your area where a factory decided to close down for good rather than spend the money to stop polluting the air or the water?

Yes . . . . 1 No 2 62-

21b. Suppose that a factory in your area were told by the government to stop polluting the air or the water and the company decided to close that factory down and build a new, modern one in another area. Suppose that by closing that factory down, 200 people were thrown out of work in your area. Now I'd like your reaction to this factory closing. First assuming that these 200 people were left to find new jobs on their own and later assuming that the government would retrain these people and help them find new jobs.

21c. (HAND RESPONDENT CARD G) Which statement on this card comes closest to expressing how you would feel about the factory closing if these people were left to find jobs on their own? (CIRCLE BELOW.)

21d. Which statement on this card comes closest to expressing how you would feel about the factory closing if the government retrained these people and helped them find new jobs? (CIRCLE BELOW.)

	21c	21d
A. It's too bad but it has to be done	1 63-	1 64-
B. It's really too bad	2	2
C. It's hard to decide	3	3
D. It's a very bad thing to do	4	4
E. It's a terrible thing	5	5
F. None of these (PROBE AND SPECIFY) ________________	6	6

22. To clean up pollution and to improve the quality of our environment will cost money. Suppose you have two choices to pay for the cost of improving the environment. One choice is to pay higher prices for those products that will cost more to make if we want to stop pollution. The other choice is to pay higher taxes to have enough money available for pollution control. Given these choices, would you prefer to pay higher prices or pay higher taxes?

Pay higher prices 1 65-
Pay higher taxes 2

CLASSIFICATION DATA

You have been most helpful. Now I just need a few facts to help us classify the answers. By the way, your answers will be grouped with those of other people like yourself. Your name will not be used at all.

A. What relation are you to head of this household?

Head of house . . . . 1 ⟶ SKIP TO QC	Daughter 4	66-
Wife of male head . . . 2	Other 5	
Son 3		

B. What type of work does the head of this household do? (INTERVIEWER: OBTAIN A PRECISE DESCRIPTION.)

____ 67-

C. Are you currently employed?

Yes . . . . . . [ ] ⟶ ASK QD No . . . . [ ] ⟶ SKIP TO QE

D. What type of work do you do? (INTERVIEWER: OBTAIN A PRECISE DESCRIPTION)

____ 68-

E. What was the last grade of school you completed?

Eighth grade or less 1	Some college 4	69-
Some High School 2	College graduate or beyond . . 5	
Completed High School . . . 3		

F. What is your age?

18-24 1	45-54 5	70-
25-29 2	55-64 6	
30-34 3	65 or older 7	
35-44 4		

G. How many cars do you have in this household?

0 1 2 3 4 or more 71-

H. Do you, yourself, drive a car?

Yes . . . . 1 No 2 72-

I. (HAND RESPONDENT CARD H) Would you tell me which letter on this card indicates your total household income, that is the combined total for all the members of this household in one year.

73-

A. Under $3,000 1
B. $3,000-$4,999 2
C. $5,000-$6,999 3
D. $7,000-$9,999 4
E. $10,000-$14,999 5
F. $15,000-$19,999 6
G. $20,000 and over 7
Don't know 8
Refused 9

195

J. (HAND RESPONDENT CARD I) Please tell me whether you yourself or whether a member of your household belongs to any of the following organizations. Please use the letters on this card to give your answer.

	A Only Respondent Does		B Only Other H.H. Member Does		C Both Respondent & Other Do		D No One In H.H. Does	
Agricultural farm groups, such as 4-H, FFA or others	1	74-	1	75-	1	76-	1	77-
League of Women Voters	2		2		2		2	
A labor union	3		3		3		3	
Sierra Club, Friends of the Earth or similar organization	4		4		4		4	
Boy or Girl Scouts	5		5		5		5	
Audubon Society	6		6		6		6	
Fraternal organization such as Elks, Rotary, Knights of Columbus, etc.	7		7		7		7	
Local environment club or organization	8		8		8		8	
Hunting and fishing club	9		9		9		9	
Garden club	0		0		0		0	
Chamber of Commerce, Trade Association or other business group	x		x		x		x	

K. INTERVIEWER RECORD:

Black 1 78-
White 2
Other 3

Female 1 79-
Male 2

80-2

221